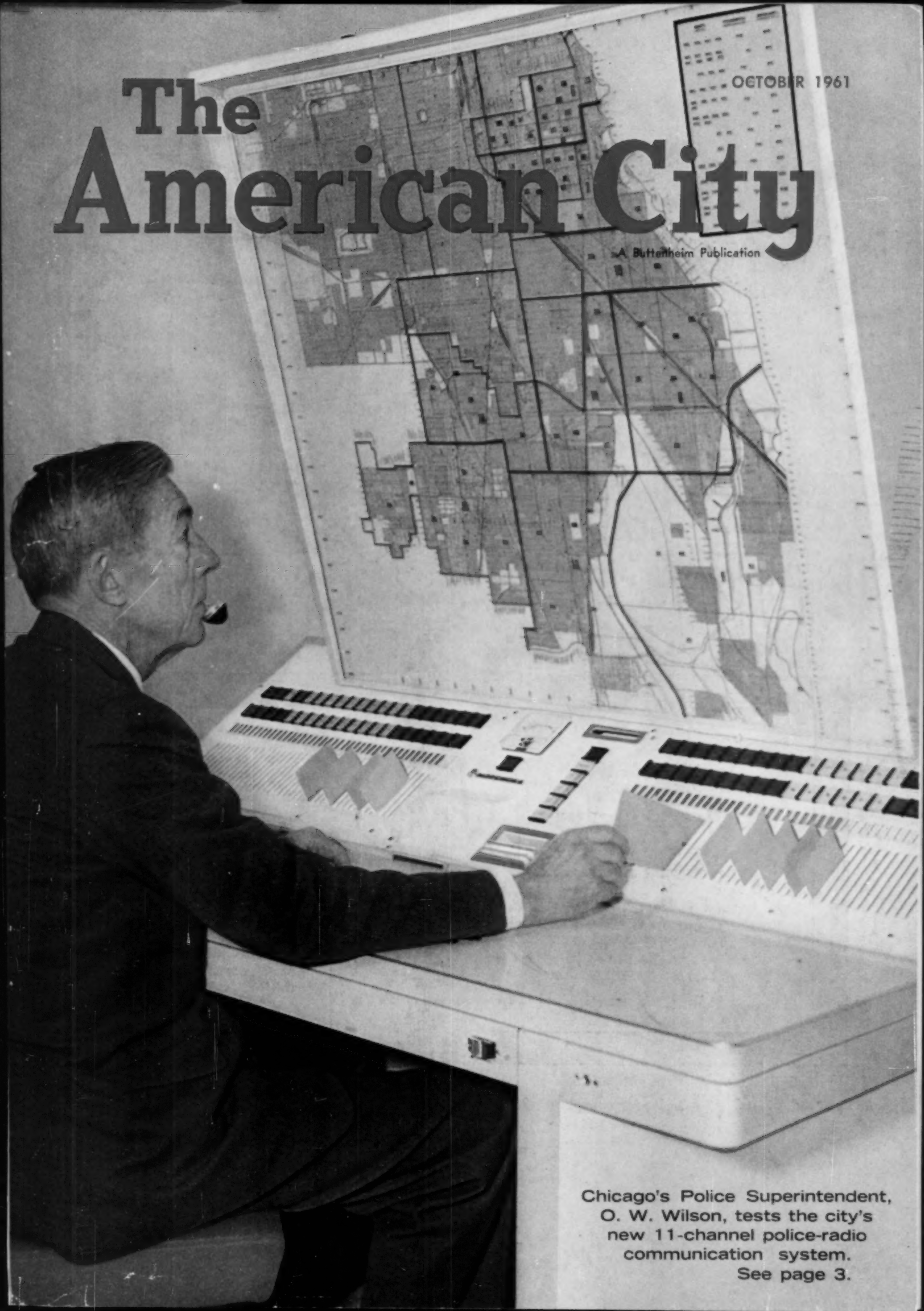
OCTOBER 1961

The American City

A Buttenheim Publication



Chicago's Police Superintendent,
O. W. Wilson, tests the city's
new 11-channel police-radio
communication system.
See page 3.

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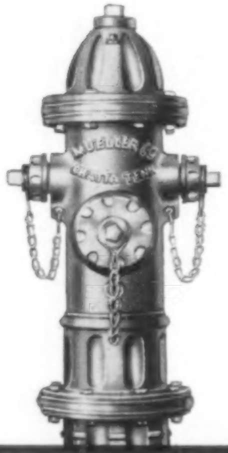

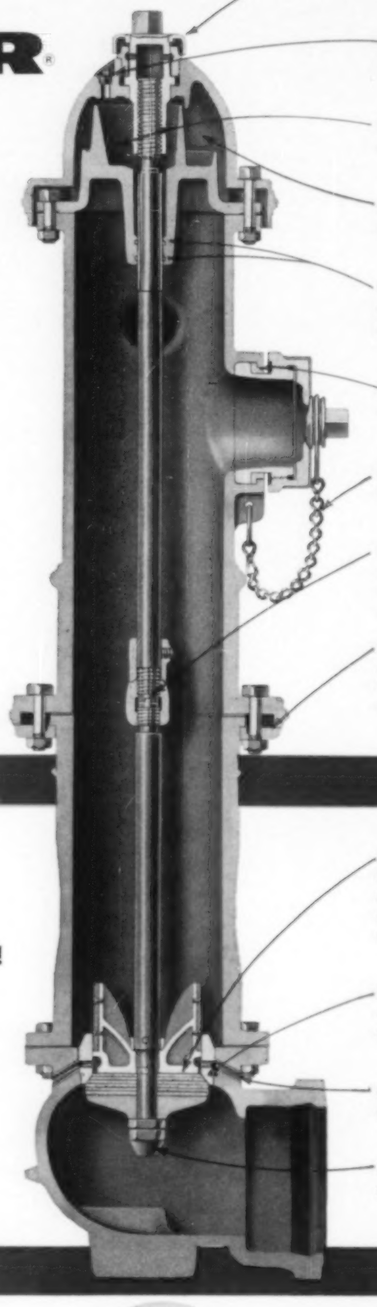

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MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

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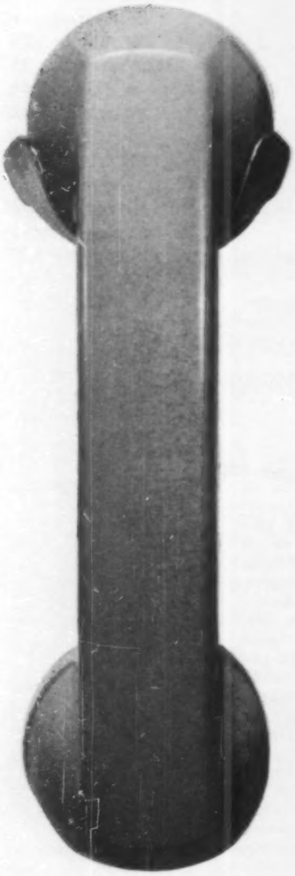
The Cover Picture

The American City

Chicago's record-breaking police radio system, able to reach 885 mobile units through 22 base stations, is one of the progressive measures taken by Superintendent of Police O. W. Wilson. Mr. Wilson came to Chicago to head its Police Department as the result of detailed, nationwide search for a police administrator by that city. He has a 40-year record of experience in the police administration field, starting in Berkley, Calif., as a patrolman. He was Chief of Police of Wichita, Kan., from 1928 to 1939, leaving to become professor of police administration at, and eventually dean of, the school of criminology at the University of California. He has directed reorganization surveys of police departments in 13 major cities of the United States and Canada. He is the author of four texts on police and public safety and is a graduate of the University of California. The article describing the system appears on page 171.



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Volume 76 Number 10

The American City

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ASSOCIATED PUBLICATIONS

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Municipal Index	MART	AMERICAN SCHOOL AND UNIVERSITY

FEATURED THIS MONTH

▶ First Municipal Moving Sidewalk page 91

. . . is now unsnarling an annoying pedestrian traffic problem in Tacoma, Wash. City Manager David R. Rowlands tells what went into this precedent-breaking improvement, why Tacoma installed it, and also gives a breakdown of the costs.

▶ Compact Car Savings page 97

. . . is only one of the items that Wendell Rote, Superintendent of Mechanical Maintenance, Phoenix, Ariz., discusses. You undoubtedly will want to make notes on what he has learned.

▶ Bankrupt Urban Policies page 101

. . . get rough handling by one of the nation's most skilled city planners. L. M. Orton, jointly honored by three professional societies for his work in this field, points up the road blocks to constructive urban growth and those dynamic policies that need developing.

▶ Polaroid "Mug Shots" page 109

. . . is the resourceful, money-saving development now being used by the police department of Pompano Beach, Fla.

▶ Refuse-Collection Safety page 110

. . . pays big dividends both on the profit-and-loss balance sheet and in the avoidance of human suffering. Ben F. Snook, safety engineer, tells how you can incorporate these double-barrelled savings into your city's program.

▶ Good Swimming-Pool Operation page 112

. . . gets spelled out in easy-to-understand details by W. M. Honsa of the Illinois Department of Health. He tells how to make your public swimming pools into good attractive centers of recreation and not sewage-treatment plants.

▶ The Blight of Overhead Wiring page 117

. . . is one of those difficulties that a city can correct, gaining large-scale benefits without investing a great deal of money. The program in Seattle, Wash., tells how.

▶ Smoke Bombs for Sewers page 145

. . . may sound odd, but just demonstrates the resourcefulness of City Engineer Charles E. Stacy, McPherson, Kan. He tells how he uses them to find sewer infiltration.

▶ Sewer-Service Charges page 163

. . . goes into its first installment this month with a discussion of why cities need them. Succeeding installments will explain other aspects of this subject and list typical charges in representative cities.

▶ The Newest in Police Radio page 171

. . . is currently going into Chicago's "crossband" radio system. Note the feature on the front cover and also the story telling how the system performs, explained by Superintendent O. W. Wilson.

▶ An Aerial Survey page 173

. . . makes all sorts of constructive urban developments easier to achieve. City Manager Richard H. Custer, Zanesville, Ohio, tells how he uses the survey for his city, and the way that it has speeded improvements.

▶ Next Month—

. . . watch for the story of **Midwinter Pot-Hole Patching** developed in Normandy, Mo. Learn the fascinating variety of records that Pittsburgh is able to keep on its punched cards **(Pittsburgh's Punched Cards Record Everything)**. See how Hollywood, Fla., **preserves standing trees** in new developments. Watch also for further installations of our new series on **Sewer-Service Charges**.

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EDITORIAL

Understanding Federal Aid

If you are going to argue the merits of federal aid for local governments, you had better do so from a standpoint of knowledge instead of ignorance, from objectivity rather than emotion. A lot of people who are normally good, careful thinkers have been trapped by what look like attractive arguments that just don't stand up into denouncing federal aid.

Take, for example, the often-quoted claim of shrinkage. Many eloquent words have emerged from speakers' rostrums asserting that by the time your tax money goes to Washington and returns, it has passed through hundreds of sticky hands, each scooping off its share, so that what comes back to the community is only a remnant of the original.

Mayor John S. Ridley, Smyrna, Tenn., (population 3,600) did a little investigating recently and discovered that the facts do not bear this out. Speaking at the recent meeting of the American Municipal Association in Seattle, Mayor Ridley explained that the federal government can collect $100 in taxes for about 44 cents. State governments need from $0.95 to $2.34 to collect the same amount. He also discovered that, of the ten federal grant programs accounting for more than 80% of all federal grant spending, the total cost for federal administration, research and other associated activities was 1.2% of the grant payments. If you add this to the 0.4% for tax collection, you get a total "shrinkage" of only 1.6%. Even the most earnest opponents of federal aid will have to admit that this is admirable administration.

Take also the assertion that these funds merely put back into your pocket what you have just paid out. Senator Joseph C. Clark, former mayor of Philadelphia, often has rebutted this argument. The money does not go out and into the same pocket. When local governments must raise money, they have to rely principally on the much abused general-property tax or on various service charges. The federal government, in contrast, gets the bulk of its revenue from the broad base of the income tax that reaches across governmental boundaries. There is a good deal of difference between the group of taxpayers who pay the bulk of the federal income tax and those who pay property taxes, special assessments, and service charges.

Another common complaint is that when money comes out of Washington, bureaucratic controls generally come with it. Mayor Ridley again looked matters over and found that this did not have to be so. The federal government, for example, finances as much as 50% of the cost of the federal-aid highway program and 90% of the interstate system. Yet the states and local governments own and control them.

The federal government also contributes as much as 50% of the money for airport construction, yet local governments own and operate them.

Moreover, no grants in aid do not necessarily mean no outside control of a project. For example, let a city build a sewer within its own boundaries, and pay for it completely with its own funds. The state will still exercise its privilege of approval or disapproval of the design, construction and material used for the sewer pipe.

Still another argument is that these federal programs are just "big city grabs" that leave the little cities entirely out of consideration. Mayor Ridley looked at the programs in Tennessee and found that:

- **of the 20 municipalities engaged in urban renewal in his state, 15 have populations of less than 25,000.**
- **in the federal urban-planning-assistance program, 65 small Tennessee municipalities received grants.**
- **of the money granted to abate water pollution, 13 Tennessee cities and possibly 17 will receive grants. One of these is Sharon, population 966.**

Mayor Ridley observes wryly that people rarely object to federal assistance for themselves. But they will shout "socialism" about the federally aided project in the next county or state.

These arguments only skirt the fundamental question —is it a sound policy for a local government to expect outside aid, either from its state government or the national, before making an improvement of a local nature? There is no doubt that these grants do stimulate such construction. Unfortunately, the use of these stimulants generally means that they must continue to be used before constructive action like this can take place.

Nevertheless, this we do know: the number of services that the public requires local governments to provide has grown phenomenally, faster than the so-called population explosion; and the sources of revenue available to these same local governments to finance these activities have not grown proportionately. At this point, one starts justifying some sort of outside assistance. How extensive this assistance should be is the next step in the analysis.

But to condemn this assistance flatly, claiming "shrinkage" in handling; or alleging that the funds return to the same pocket; or charging "bureaucratic federal control" is to lay yourself open to scornful rebuttals by those who know the facts.

Some time ago, we heard a very fine sanitary engineer say with some irritation, "It's hard enough to keep up with what's happening in your own profession without at the same time having to become a tax economist."

The blunt fact is that a sanitary engineer, if he is to be well informed, professionally, *must* have an understanding of tax fundamentals, city planning, administration and political science, at least as it relates to local governments. This must be as much a part of his professional "tool kit" as BOD's, suspended solids, chlorine demand and his slide rule.

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OUR MUNICIPAL NOTEBOOK

READING THROUGH GLASS BLOCKS

In Deedfield, Ill., the water-meter reader no longer has to go down into the basement to get his readings. In all residential construction, the village requires a glass block placed in the wall. The water department then installs the meter at an angle of approximately 45° behind the block so that the meter reader can make his observations from outside of the house. Extensive tests by the Badger Meter Company, supplier of the meters, showed that the 45° angle would not impair operations. Village Manager Norman W. Stilphen reports that actual operation over the past few years has confirmed that they perform accurately.

* * *

SPEEDY CITY STATISTICS

There was a time when Dallas, Texas, would think long and carefully before asking its Health Department to compile statistics such as the average age at death or the per cent of total fatalities caused by a given disease. Now that the city has compiled its statistics on punched cards the central processing center can determine figures like this in five minutes by running the cards through an IBM 604 Calculator.

* * *

TOURISM AS A MUNICIPAL ASSET

Tourism is an economic resource that more communities apparently should exploit. Conservatively each visitor will spend at least $12 a day in the area he visits. If a small community can arrange its affairs to attract 100 visitors a day, it will have pumped $1,200 per day into the local economy.

Hawaii expects 340,000 visitors this year, and each will spend an average of $450 exclusive of travel costs. In the 50th state, the tourist has replaced the pineapple in economic importance. Tourism employs 11,000 people here directly and another 17,300 indirectly.

To encourage tourism, a community must develop itself as a "destination area" that will motivate a traveler to visit it. This requires you to:

- *give your area identifying characteristics.*
- *develop a favorable attitude toward your community in the traveler.*

* * *

OUT-OF-CITY FIRE PROTECTION

In Kinston, N. C., the county supplies the men and equipment, and the city houses them, provides training, and has the right to use the equipment when it is not needed for county service.

According to the agreement, Lenoir County provided $30,000 per year to pay the salaries of six men and purchased a 500-gpm American La-France pumper and a Ford truck carrying two 500-gallon tanks. The county also purchased a Hale F-Z portable fire pump with ejector priming and an 8½-hp Briggs and Stratton engine able to deliver 300 gallons a minute at a pressure of 50 psi. The pump has 1½-inch fog tips siamesed from a 2½-inch hose and 20 feet of hose. The pump works well on grass fires and also can fill the tanks as required. In addition, the county pays for the maintenance cost of equipment, but not the operating cost, such as gasoline or lubrication.

If you want more information on these topics, or any other municipal problems, drop a note to

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, New York

RUBBISH-DISPOSAL AREAS

Detroit, Mich., solved this problem of dwindling rubbish-disposal areas by developing 40-yard truck-and-trailer units that provide express transfer of incinerator residue some distance out of town. The hauling combination consists of ten 14-yard, six-wheel, diesel trucks which are followed by 26-yard, six-wheel trailers.

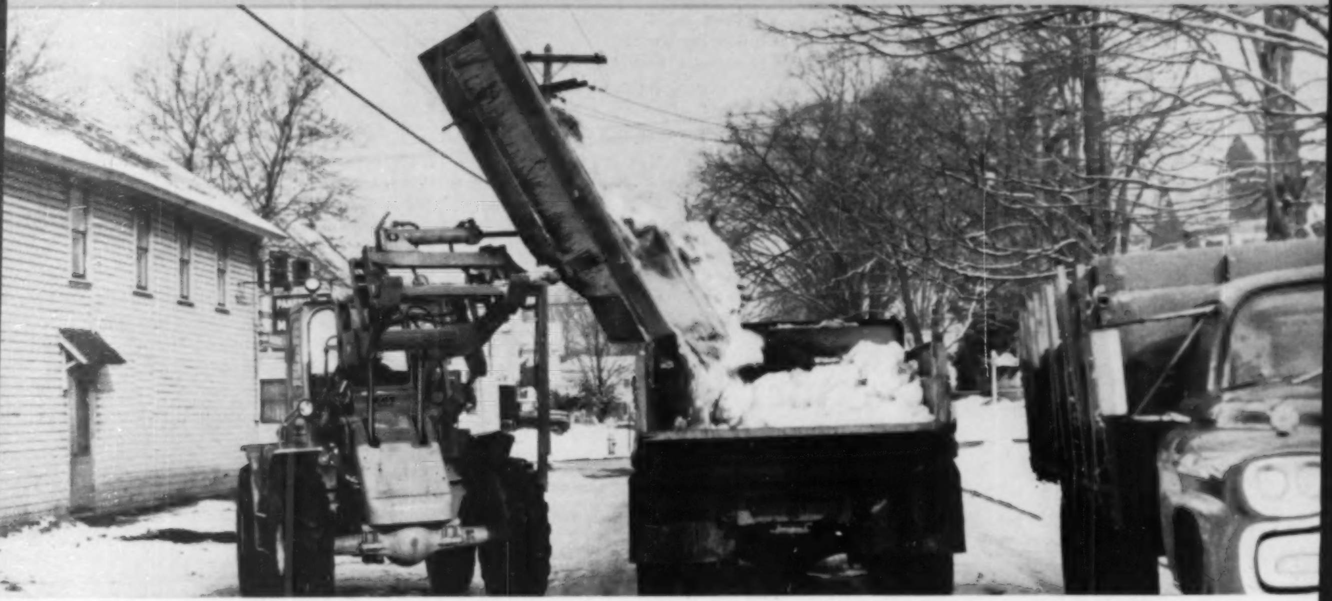
* * *

DOLLAR-SAVING EFFICIENCY

. . . in Modesto, Calif., has been characterized by skilled men on the right equipment. For example, Ross Miller, city manager, has found that one good man on a Wayne 210 leaf loader can do a better job than a half-dozen men using equipment ill-suited for the work. A crew with an air-operated Mueller B-100 tapping machine can make some 30% more water taps a day. The use of aerial photography provides accurate topography for determining right-of-way alignments through developed areas with a minimum of field survey work. Use of an Asplundh brush chipper for tree trimmings has cut trips to the dump from three or four a day to one every other day. A "High-Ranger" aerial mobile-tower unit has made possible easier, safer tree-trimming operations, with approximately forty to sixty-five percent greater efficiency, depending on the type of trimming. A Vermeer Pow-R-Stump Cutter chips stumps away to approximately 12 inches below the ground surface for about one third the former cost of hand digging. ◄◄

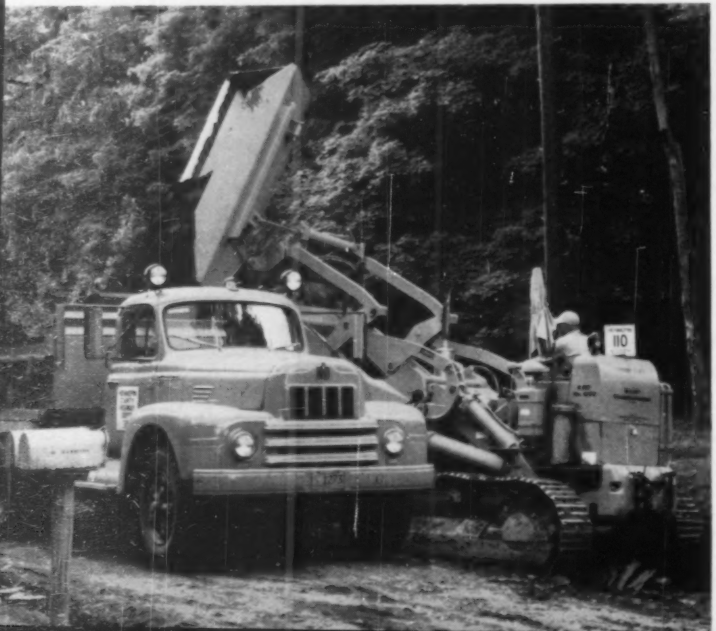
10 FEET'S ENOUGH

for Cat Loaders with Side Dump Buckets to cut loading cost and time



• **SNOW REMOVAL** under traffic—Cat 944 with Side Dump Bucket needs only 10 feet to scoop and dump into an adjacent truck. And the outside lane is open to traffic. The City of Fulton, N. Y., finds snow removal just one of the tight-spot jobs made easy by its 944 with Side Dump.

And this Caterpillar exclusive, which dumps forward as well as left, is only part of the story: Fulton Public Works officials like the way the 944 works safely in traffic; they notice the fast loading cycles due to the automatic bucket controls that lift and hold the loaded bucket, reset to the correct digging angle—all while the operator is maneuvering the loader; and they're pleased with the fast power shift that boosts operator efficiency, saves time.



• **DIGGING OUT** a tough, frost-buckled road, this Cat 977 excavates and loads from one lane —working here for Hennepin County, Minn. There's no time-wasting jockeying and turning, or tearing up yards and ditches.

• **CUT COSTS 38%.** In a recent comparison test a 977H was equipped with a side dump and then a conventional bucket. Loading bank run sand and gravel, the side dump bucket reduced handling cost 38% and cycle time 35%. That kind of efficiency pays for itself quickly. It's one of the reasons Caterpillar equipment sets the standard for low, long-term cost. Ask your Cat Dealer to demonstrate these cost-cutting advantages to you.

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STREET CONSTRUCTION AND MAINTENANCE

We Build Streets of Oyster Shells

The operator spreads a load of oyster shells.

Oyster, reef and clam shells, economical substitutes for aggregate, form the base and surfacing for old, dedicated streets which the city of New Orleans must open to travel. These are streets which owners dedicated many years ago prior to the advent of adequate sub-division regulations.

We purchase these shells, delivered to the job at a cost of $2.04 per cubic yard, under a contract with local material vendors and spread them with our own International Drott TD-9. Because the water table is often only a few inches below ground surface, excavation is difficult. The usual practice is to build the new road above the surrounding property. A typical street contains four inches of the larger oyster shells on the bottom, covered with eight inches of the reef and clam shells. No other surfacing is necessary at this time.

The finished roadway contains a 24-foot surface, which includes a three-foot shoulder on each side. Drainage ditches complete this section. This construction stands up well for access to adjoining lots and takes place only after abutting owners give assurance of building on the property. The access road thus constructed provides the base for future street improvements which naturally follow when houses fill the vacant lots.

Albert G. Wyler, *Director*
Department of Streets
New Orleans, La.

Street-Maintenance Costs in Hollywood, Fla.

The Hollywood (Fla.) Street Department maintains approximately 240 miles of paved streets and alleys. Although a recent $1,000,000 repaving program brought nearly all streets and alleys up to long-wearing engineering standards, the 31 employees of the Department still keep busy maintaining road shoulders, sweeping, and patching potholes to prevent quicker than normal deterioration.

The department operates at an average manhour cost of $1.80 per hour; the unit costs for the period from October 1st, 1960 to March 31st, 1961 appear in the table below. ◄◄

UNIT COSTS

Operation	% of Total	Unit	Quantity	Unit Labor Cost
Patching potholes	3.4	ton	137	$14.40
Hand sweep streets	4.5	mile	436	6.15
Machine sweep	3.5	mile	1,794	1.15
Handsweep intersections	3.9	each	2,209	1.04
Excavating, loading, hauling	5.0	cubic yard	5,694	.52
Street repair (asphalt)	10.0	square yard	8,236	.72
Maintain drywells	1.2	each	265	2.58
Paint, letter street markers	1.0	each	664	.38
Road shoulder maintenance	10.4	cubic yard	5,531	1.10
Requests and complaints	1.0	each	400	1.47
Clerical and reports	3.2	each	980	1.91
Base repair, rock	10.9	square yard	5,980	1.07
Grading, landscaping	11.9	square yard	76,824	.09
Miscellaneous maintenance and project work	30.1	hour	9,833	1.80

EXCLUSIVE ONE-PIECE CAB-BODY DESIGN gives Ford Styleside Pickups extra capacity and extra strength. Heavy duty in every way for heavy going all day! And there's carlike riding comfort thanks to Ford's long wheelbase and exclusive *Driverized* Cab!

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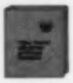
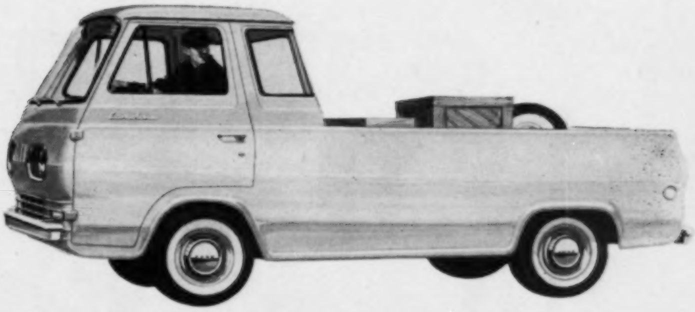
FORD TRUCKS COST LESS

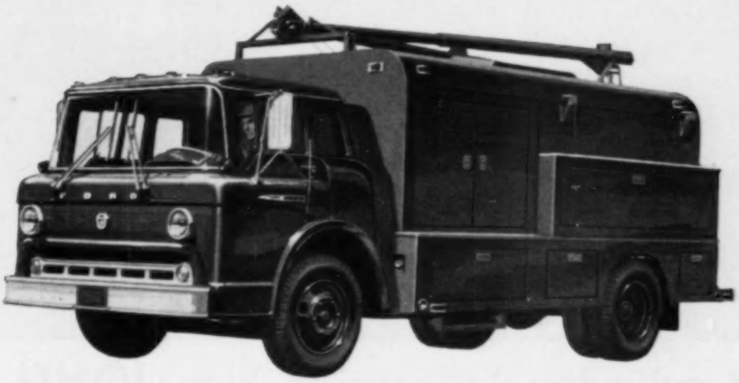
SAVE NOW . . . SAVE FROM NOW ON!



ECONOMICAL HEAVY DUTY V-8's with 292-, 302- and 332-cu. in. displacement give you tailored-to-the-job economy at much lower prices than you would expect in trucks with engines of this size. Stress-relieved cylinder heads, aluminum alloy pistons and sodium-cooled exhaust valves are but a few of the heavy-duty features you get with these engines.

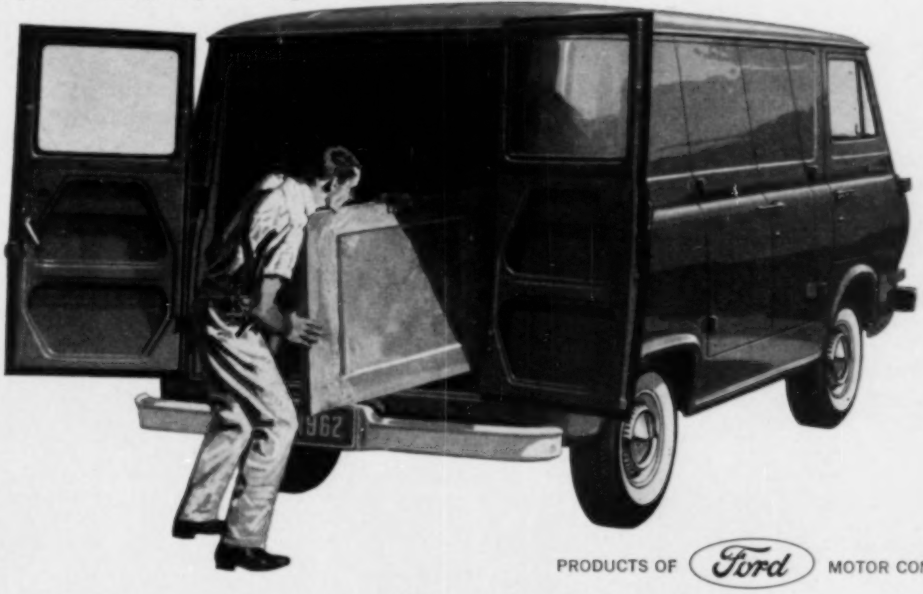


ECONOLINE — ALL-ROUND ECONOMY LEADER — and low price is only the start! Certified tests show this pickup may save $100 on gas, oil, tires and license over your present conventional pickup every 16,000 miles you drive.



AMERICA'S MOST POPULAR VAN — and small wonder! Econoline savings start with a price far under any popular ½-ton conventional panel on the market! And they continue saving every day—certified tests have shown that in 16,000 miles, savings in operating costs compared to the conventional panel you may now own could top $100! Big 4-ft. doors rear and curbside plus 204 cu. ft. of loadspace, and a floor that's flat the full length, mean easy cargo handling.

PROVEN 262-CU. IN. BIG SIX FOR FORD MEDIUMS includes more heavy-duty engine features than any other Six of its size. Never before such long-term durability, reliability, and economy at so low a price.



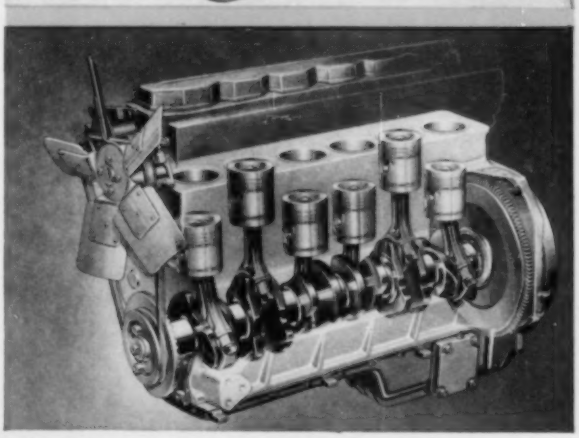
PRODUCTS OF Ford MOTOR COMPANY

6-cylinder 94* engine h. p. JOHN DEERE 4010

4010
JOHN DEERE

iesel; 92 eng. h.p. Gasoline

NEW POWER FOR THE LONG PULL



Designed for big work output at blade and drawbar, bucket and powershaft, the new John Deere "4010" has both the reserve power and the flexibility that fast-paced construction schedules require.

Two large-capacity hydraulic systems speed stockpiling and material handling with the "4010" Loader. Smooth power braking in both directions, and power steering are supplied by a central, constant-pressure system. Bucket and lift arms, operated by single-lever control, are powered by separate, constant-volume pump.

Well-adapted for a wide variety of work with rear-mounted equipment, the "4010" delivers top performance from tampers and rollers, soil-cement and bituminous mixers, harrows and other specialized tools. Optional three-point hitch precisely controls cutting depths with mixers and disks. Independent power take-off available as special equipment: Rear switches from 540 to 1000 RPM in seconds; front is for 1000 RPM only. Wide-swing heavy-duty drawbar or standard drawbar adjustable for length and height meet all requirements. PTO and hydraulic controls are arranged for easy reach from comfortable, back-supporting seat.

Exceptionally heavy construction of the 6-cylinder engine is marked by a high-inertia, 150-pound, forged steel crankshaft with seven main bearings, solidly supported by interior webbing. Pan is a one-piece casting providing extra rigidity and engine protection. Pistons are aluminum alloy for rapid heat dissipation: special for each fuel type. Forced engine ventilation, exhaust valve rotators, full-pressure lubrication, and replaceable cylinder sleeves surrounded by coolant improve operation, increase engine life. Constant-mesh transmission, 8 speeds forward, 3 reverse.

To arrange for a demonstration, and obtain facts on the John Deere Credit Plan and long-term leasing, see your dealer. Check the yellow pages.

John Deere, 3300 River Drive, Moline, Illinois

JOHN DEERE LOADERS BULLDOZERS BACKHOES AND EARTHMOVING EQUIPMENT

JOHN DEERE

On the day of the Indianapolis "500"

HARLEY-DAVIDSON police motorcycles

Highly maneuverable Police Solos are part of a well-coordinated ground and air traffic control plan that moves nearly 50,000 vehicles to-and-from the site of the famed 500-mile race — smoothly, quickly, safely.

They descend on the Motor Speedway like some great army on the move — automobile race fans by the hundreds of thousands. You expect them to overwhelm the city. They don't. Indianapolis is ready for them on race day.

In the air, two planes with traffic spotters methodically circle the area surrounding the world capital of big car racing. Over the Speedway an observer helicopter hovers. In the 80-foot control tower inside the Speedway, Indianapolis Police Department and state police department traffic experts wait to dispatch motorcycle officers to reported tie-ups.

One highway accident, for example, backed up traffic 16 miles. An aerial spotter sighted it and relayed the information to the control tower. A. E. Jacobs, Inspector of Traffic for the Indianapolis Police Department, quickly directed officers to re-route some city traffic. The bumper-to-bumper snag cleared in minutes.

Harley-Davidson police motorcycles play a key role in this outstanding Indianapolis traffic control plan. "Speed and mobility in an operation of this type are imperative," Inspector Jacobs points out.

"Give a good motorcycle officer a three foot space and he will get through," he says. "Motorcycles are there when you want them!"

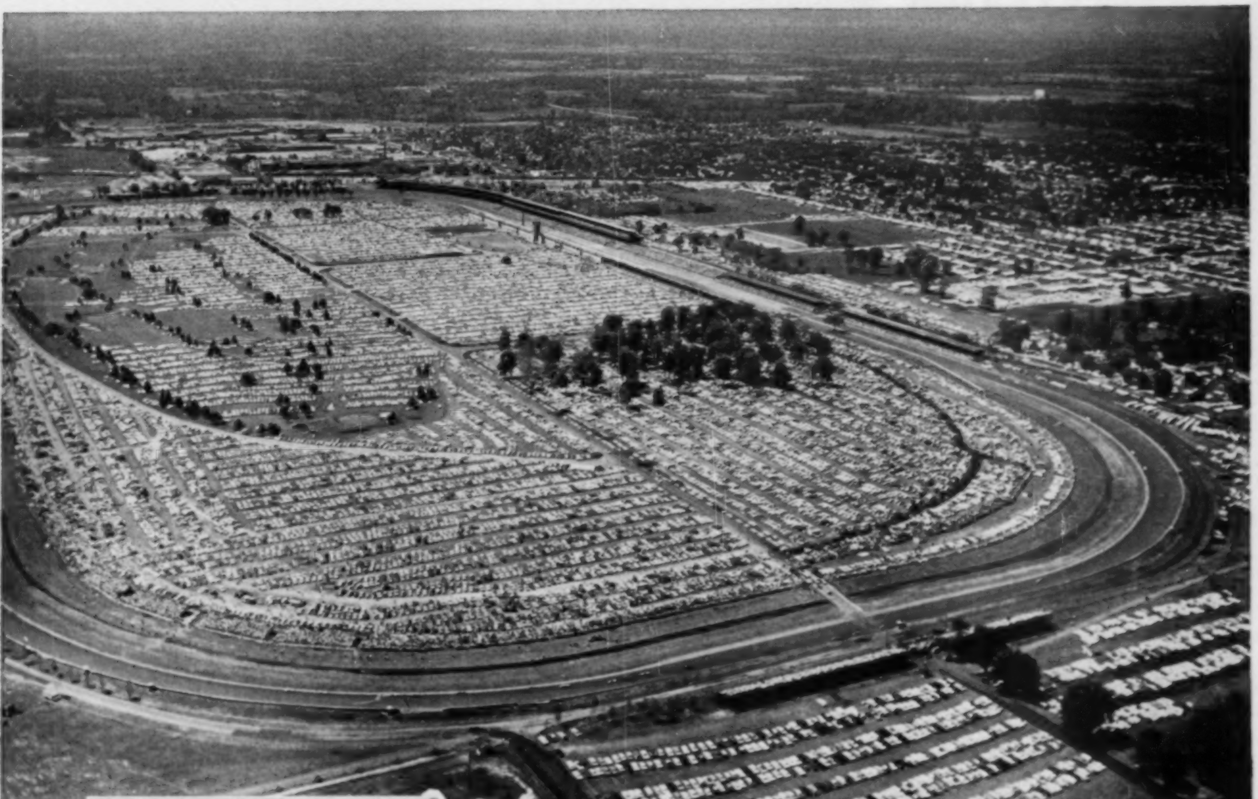
The Indianapolis Motorcycle Division has 82 Harley-Davidsons. Ten more will be added at a future date.

"Our Motorcycle Division is not only used for traffic and law enforcement. We also find them invaluable for escort duty and in emergencies," Inspector Jacobs says.

He keeps the stream of traffic flowing safely and quickly. Mounted on a Harley-Davidson Police Solo, this Indianapolis Motorcycle Division officer can weave through the heavy raceday traffic to take on a similar duty at a different location if necessary. A Motor Speedway traffic pattern provides for precise vehicular control within the city limits.

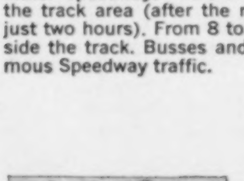
Here's the board of strategy for the smooth-working Indianapolis traffic control plan. Police Chief Robert E. Reilly is seated. Standing left to right: Lt. William Cole, of the Motorcycle Garage; Lt. Omer Lloyd, Motorcycle Division officer; and Inspector of Traffic, A. E. Jacobs. Police Chief Reilly is proud of his Motorcycle Division. "It makes a tremendous contribution in crowd control, traffic control and law enforcement generally," he says.

help head off a traffic nightmare



Joseph Quinn, Safety Director of the Indianapolis Motor Speedway, and Indiana State Police Officer, Captain Alva Funk, receive a traffic report in the 80-foot control tower inside the Speedway. Safety Director Quinn reports he also employs 25 Harley-Davidsons on race day to control parking in and out of the Speedway.

"The largest parking lot in the world," is the way Inspector of Traffic A. E. Jacobs describes the Indianapolis Motor Speedway. There are 39,000 cars parked inside the track area (after the race, they will be cleared in just two hours). From 8 to 10,000 more cars park outside the track. Busses and cabs also add to the enormous Speedway traffic.



Send for a free copy of the new Harley-Davidson Police Motorcycle brochure. This handsome 12-page brochure covers both the versatile Harley-Davidson Police Solo and the all-purpose Police Servi-Car. Write to Harley-Davidson Motor Co., Milwaukee 1, Wisconsin. Dept. AC-10.

HARLEY-DAVIDSON

Police Motorcycles

No. 2 in a series of announcements on new HOUGH *machines*

This all-new $1\frac{3}{4}$ cu. yd. PAYLOADER is far ahead of any machine in its price class . . . in capacity, power, design and performance

The Frank G. Hough Co. has been engaged in a continuous program of research, development and improvement of exising models ever since it pioneered the first four-wheel-drive tractor-shovel. This program led to the new concept and design of the H-30 and H-120 PAYLOADER units which gained tremendous acceptance during the past two years and has helped to maintain PAYLOADER leadership.

The H-60 represents even further progress and development. It is a completely new machine in size and capacity with these special points of interest . . .

High Lift and Long Reach: Note the ease with which the operator deposits a full load in the hopper. Faster, more productive cycles are the result.

Safety and Convenience: All bucket and boom mechanisms are located ahead of the operator compartment for maximum protection. The steeply-sloped cowl and open design give 100% visibility. The comfortable, adjustable bucket seat and conveniently located controls make operation easy. The walk-in operator's compartment is easily accessible with safety ladder and hand rails.

Less Maintenance: Only PAYLOADER units like the new H-60 have a simplified boom mechanism with a single bucket tilt cylinder. This means you have from 4 to 10 fewer pivot and grease points and fewer parts to service and maintain. Furthermore, all pivot points on steering, boom and bucket mechanisms are fitted with "O" rings and other seals which keep grease in and dirt out to provide longer life and less maintenance. The hydraulic steering system uses two direct-acting rams with fewer pivot points.

"Keep-clean" Hydraulic System: A valuable, exclusive HOUGH feature is the closed and pressure-controlled hydraulic system to keep out air-borne dust and moisture. The new cylindrical, vessel-type reservoir has extra strength and the entire top is easily removed for thorough maintenance and easy servicing. There is a complete full-flow micronic filtering system.

"No stop" Full Power-shift Transmission: This HOUGH transmission was developed exclusively for rubber-tired tractor-shovel requirements and has been thoroughly proven on thousands of PAYLOADER units. All shifts, up or down, forward or reverse, can be made "on-the-go" with no stopping and engagement of gears needed for "range-shifts."

Sealed, 4-wheel Power Brakes: These powerful brakes are air-controlled with only touch-toe effort and are sealed against dust and dirt. Furthermore, the exclusive HOUGH axle design makes it possible to service and re-line the brakes without removing and exposing planetary hubs to dust and dirt. Another important HOUGH-pioneered feature is the "Operator's choice" dual brake pedals which permit braking with or without transmission engaged.

Positive Oil Cooling: Separate fan-cooled oil-to-air radiator assures positive cooling of both transmission and torque converter oil. Another exclusive HOUGH protective feature.

"Power-transfer" Differentials: Both axles are equipped with torque-porportioning differentials. When one wheel has better traction than the other on the same axle, it can automatically receive up to 38% more torque. This assures the best possible traction at all times.

The new H-60 model is offered with a choice of gasoline or diesel power and with buckets from $1\frac{1}{8}$ to $3\frac{1}{2}$ cubic yard capacities. (S.A.E. rated) For additional information and specifications, see your HOUGH Distributor or use the attached coupon.

THE FRANK G. HOUGH CO. 10-B-1
710 Sunnyside Ave., Libertyville, Ill.

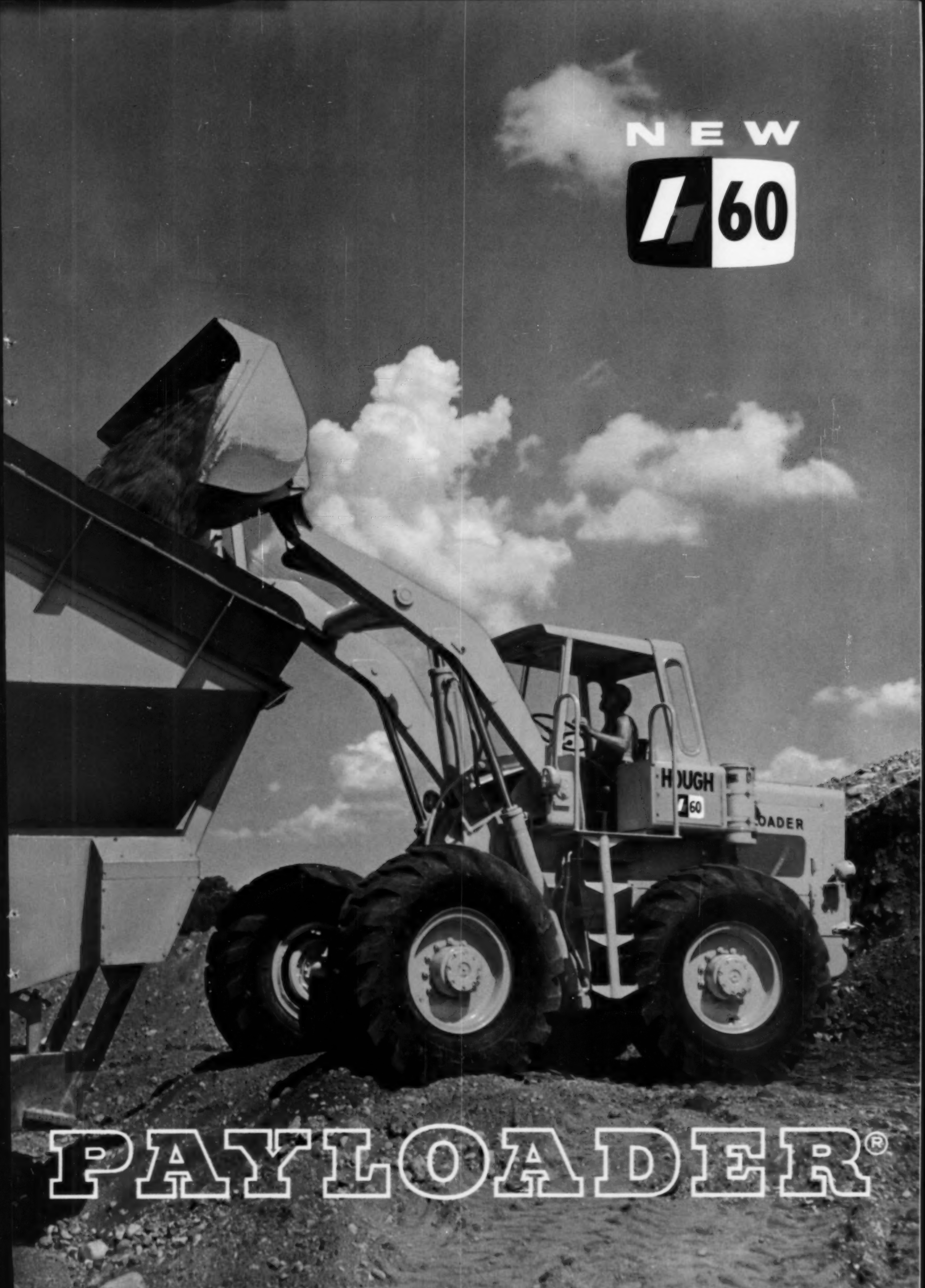
Send full data on all-new Model H-60 "PAYLOADER"

Name ____________________
Title ____________________
Company ____________________
Street ____________________
City ____________ State ____________

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYDOZER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

HOUGH®


HOUGH
60
LOADER

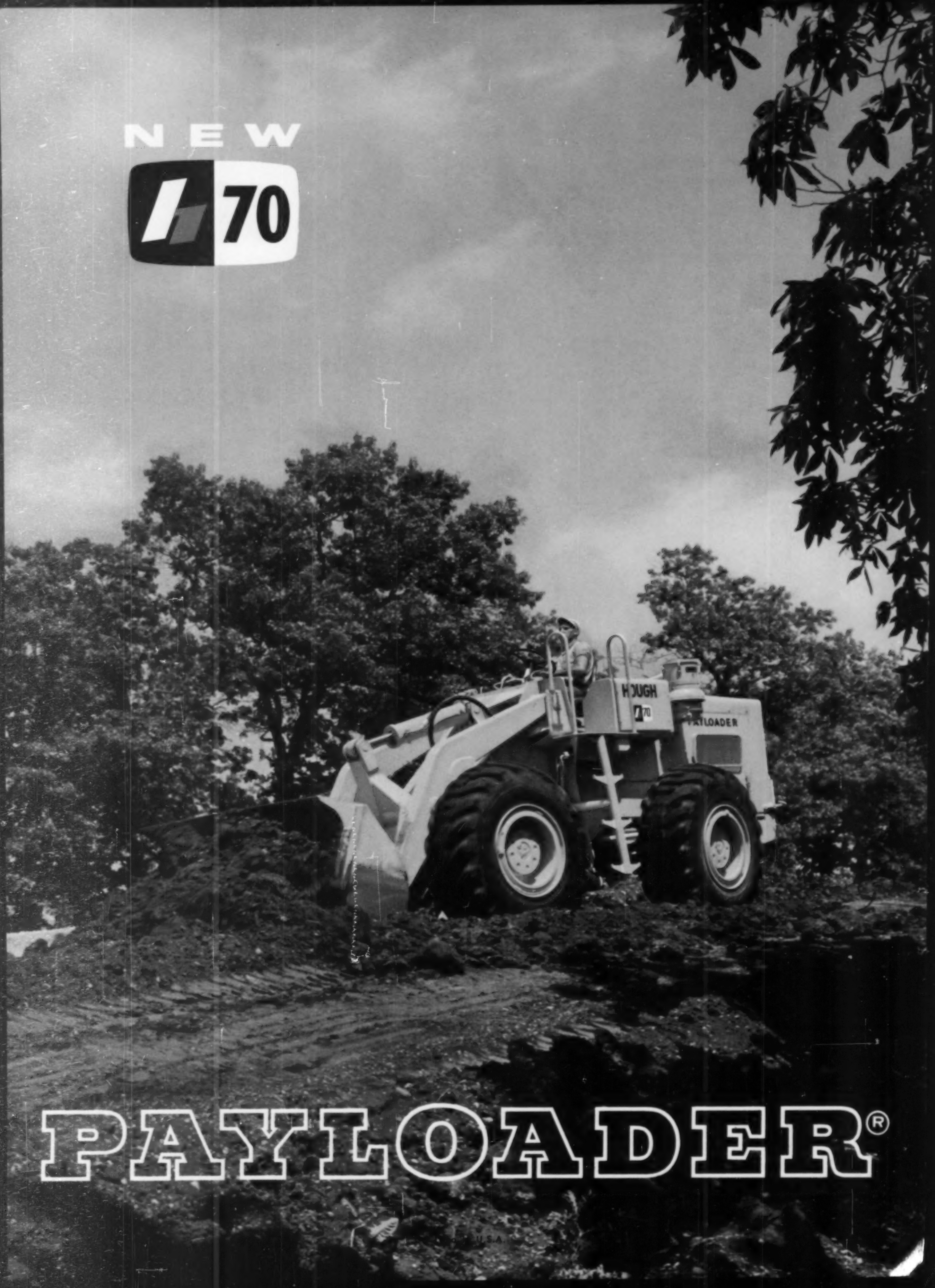
NEW

60

PAYLOADER®

NEW

70


HOUGH
70
PAYLOADER

PAYLOADER®

U.S.A.

No. 3 in a series of announcements on new HOUGH *machines*

The new 2½ cu. yd. PAYLOADER

has everything

according to the aggregate producers and contractors who tested this unit

The advanced design and exclusive features of this new H-70 series "C" model were subjected to many months of continuous, rugged testing by users on actual job-site locations before final evaluation.

Those items which contributed the most to the unmatched performance of the smaller H-30 and larger H-120 four-wheel-drive PAYLOADER models during the past two years served as a guide for the development of this completely new 2½ cubic yard tractor-shovel.

By comparison with the previous model, the H-70C has increased capacity, more power, greater flotation, additional reach, easier handling, simplified maintenance, new safety features and vastly superior performance. Some of the features are:

More Capacity: An increase of 25% in the size of the standard bucket, from 2 to 2½ cubic yards. (S.A.E. rated) Optional buckets from 1⅝ to 5 cu. yds. are available.

More Power: The new heavy-duty diesel engine delivers 148 hp which is an increase of 20% over the previous model. This gives the H-70C more horsepower per pound of machine weight than any comparable machine.

Safety and Convenience: All bucket and boom mechanisms are located ahead of the operator compartment for maximum protection. The steeply-sloped cowl and open design give 100% visibility. A comfortable, adjustable bucket seat and conveniently located controls make operation easy. Safety ladder and hand rails provide easy access to the walk-in driver compartment.

Less Maintenance: The only loader in its class with simplified PAYLOADER boom mechanism and single bucket tilt cylinder. This means you have from 4 to 10 fewer pivot and grease points and fewer parts to service and maintain. In addition, all pivot points on steering, boom and bucket mechanisms are fitted with "O" rings and other seals which keep grease in and dirt out to provide longer life and less maintenance.

"Keep-clean" Hydraulic System: A valuable, exclusive HOUGH feature is the closed and pressure-controlled hydraulic system to keep out air-borne dust and moisture. The new cylindrical, vessel-type reservoir has extra strength and the entire top is easily removed for thorough maintenance and easy servicing. There is a complete full-flow micronic filtering system.

"No-stop" Full Power-shift Transmission: This HOUGH transmission was developed exclusively for rubber-tired tractor-shovel requirements and has been thoroughly proven on thousands of PAYLOADER units. All shifts, up or down, forward or reverse, can be made "on-the-go" with no stops for any "range-shift" engaging of gears.

The H-70 series "C" has many other proven HOUGH features including a separate fan-cooled, oil-to-air radiator for effective cooling of both torque-converter and transmission oil; torque-proportioning differentials for better traction; "operator's choice" dual brake pedals which permit braking with or without transmission engaged. For complete information on the tractor-shovel that "has everything" see your HOUGH distributor or use the coupon.

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYDOZER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

HOUGH®

THE FRANK G. HOUGH CO. 10-B-2
710 Sunnyside Ave., Libertyville, Ill.

Send complete data on H-70C PAYLOADER

Name ____________________

Title ____________________

Company ____________________

Street ____________________

City __________ State __________

In a narrow passage like this, only an "alley cat" can get through.

Philadelphia Adds to Its Alley-Cat Fleet

Fifteen new "alley cats" are now reinforcing Philadelphia's refuse sanitation program.

"Alley cat" is the name that Philadelphia sanitationmen have given to a specially designed Roto-Pac refuse-collection truck able to maneuver through extremely narrow streets in the residential and commercial areas of the city.

Prior to the arrival of these nimble little units, the city had to collect refuse in these areas using the old-fashioned horse and wagon. This proved to be inefficient, unpleasant, and expensive. To improve the situation Philadelphia health and sanitation officials met with engineers and officials of the City Tank Corp., Box 711, Culpepper, Va., and developed the collection vehicle which became known as the "alley cat."

The "alley cat" requires a much shorter wheel base (for greater maneuverability in narrow streets) and even though it comes equipped with all the standard Roto-Pac equipment, it is only 84 inches wide as compared to the standard 96-inch-wide unit. It holds nine cubic yards of refuse as compared to the 20 yards of the standard unit. ◄◄

Hammermill Grinds Lumber for Incineration

To eliminate the smoky haze emanating from building demolition sites, New York City expects soon to ban all open burning of waste lumber. Disposing of this combustible refuse will be the responsibility of the Department of Sanitation.

Officials will choose burning at selected incinerator locations, burning at sea, or a combination of these. Sanitary landfills cannot conveniently dispose of the combustible material because it includes large planks and beams which often interlock, creating voids as well as rodent and fire hazards. In addition, the shortage of sites dictates the need to preserve the landfills for noncombustibles only.

Incinerators cannot handle most of these combustibles without prior preparation. Most of the timbers are too large to feed into and burn in the furnaces. The thick, wooden beams often used in old buildings do not burn completely on the grates and so complicate ash removal. To remedy these situations, officials are currently testing a hammermill which macerates the unwieldy members to toothpick size.

A test run at the Gansevoort Street incinerator indicates that this method will dispose of the waste wooden materials provided that the incinerator capacity is great enough. The addition of this pulverized material would, in fact, be a boon on rainy days when the wet refuse slows burning.

The equipment consists of two conveyors and a hammermill, products of the Jeffrey Manufacturing Company. An operator on a front-end loader feeds the planks and boards onto a ground-level conveyor outside the incinerator building. The slightly inclined conveyor transports the materials to a vertical chute which delivers the wooden materials to the hammermill pit at the bottom. There, a cylindrical rotor, 42 inches in diameter and 48 inches long, turns at 700 rpm, bringing its three swinging hammers into contact with each piece of wood. A second conveyor delivers the resulting chips to the incinerator hopper. Metal objects and miscellaneous hardware which the waste lumber carries, pose no problem to the shredder. A screen separates the large metal pieces for salvage. The alternative, burning at sea on steel barges, would require tugboats and large barges. A tug would tow several barges piled high with the wooden planks and boards to a point about five miles off the coast. The combustibles could burn at this isolated spot, and the prevailing winds would diffuse the smoke out to sea in most cases. When the winds would not cooperate, the operators would necessarily suspend burning until conditions reverted to normal.

The bill now before the city council will prevent contractors from burning their 1,000 tons per day of combustible materials from demolished buildings. The net result should be a substantial lessening of air pollution. The bill provides a two-year grace period to allow contractors a reasonable time to complete prior agreements as well as to furnish sanitation officials an adequate period to study the alternate methods and prepare their facilities to receive this refuse. ◄◄

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SINCE 1882

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NIGHT AND DAY

twenty-four hour service

PUMPS • WATER WELLS • WATER TREATMENT

Layne knows that an unfailing supply of water is vital, whether it be for municipal, industrial or agricultural use. With Associate Companies located throughout the world, Layne can provide the speed, the trained technicians and the quality parts to remedy your water problem. Over 75 years of experience accounts for the ever increasing list of customers who depend on Layne for service. For service night and day, call the Man From Layne.

Write for Layne Service Bulletin 100.

LAYNE OFFERS COMPLETE WATER SERVICE: Initial Surveys • explorations • recommendations, site selection • foundation and soil-sampling • well drilling well casing and screen • pump design, manufacture and installation • construction of water systems • maintenance and service • chemical treatment of water wells water treatment—all backed by Layne Research. Layne services do not replace, but coordinate with the services of consulting, plant and city engineers.

Layne
SINCE 1882

COMPLETE
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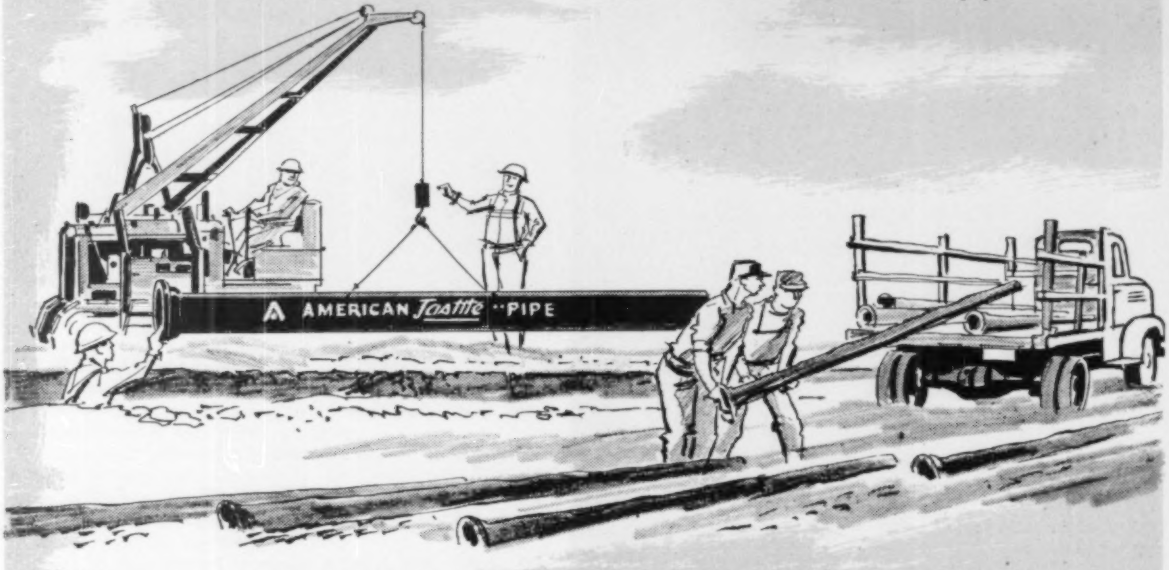
LAYNE & BOWLER, INC., MEMPHIS
General Offices and Factory, Memphis 8, Tenn.
LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD
SALES REPRESENTATIVES IN MAJOR CITIES

PIPE FACTS

The 100 largest cities in the United States, surveyed recently, have more than 95,000 total miles of water mains — more than 90% of which is cast iron pipe!

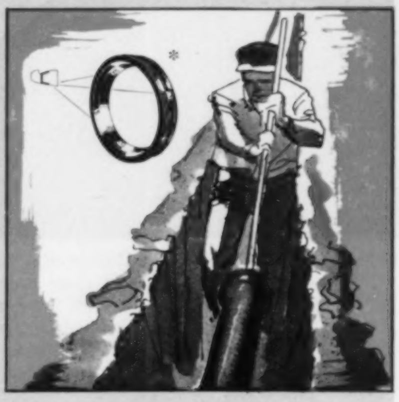


DO YOU KNOW that when larger distribution mains are needed, the smaller mains can be reclaimed for years of additional service...if they are cast iron?

In Reading, Pa., for example . . . seven miles of cast iron pipe was taken up and relaid – saving about $350,000. Rarely, if ever, is composition pipe taken up and re-used.

DO YOU KNOW that cast iron pipe is designed to withstand expected water hammer shocks which can burst weaker mains? In tests, it required 3,400 psi water pressure to burst 6″ Class 150 AMERICAN pipe. Composition pipe of similar size and class failed at 770 psi.

DO YOU KNOW that industry requires large volumes of water...and it must be economical? For most new industrial plants, water is the most important natural resource needed. In the long run, cast iron pipe delivers water cheapest of all.



DO YOU KNOW that the AMERICAN Fastite Joint requires no calking? Its only joint component is a dual hardness, easily-inserted, double-sealing rubber gasket. A minimum of labor and equipment is needed to install Fastite pipe...and the extra minutes saved soon total up to additional dollars saved in installation costs.

*Patented conductive gasket

AMERICAN CAST IRON PIPE COMPANY
BIRMINGHAM ALABAMA

Mayor Wagner and Fire Commissioner Cavanaugh inspect the new equipment in front of New York's City Hall.

Fire-Department Station Wagons

New York City's Fire Department, by acquiring 28 station wagons, is sparking a trend toward multi-purpose vehicles. These new cars, all 1961 Dodge Dart Seneca units, will be used as battalion-chief transportation vehicles and utility fire-fighting and life-saving units.

The usefulness of the station wagon for municipal service can be attested by the sales reported, reflecting a desire to take advantage of their multi-purpose character. This year Dodge has sold nearly 4,000 cars to state and municipal organizations and some 10% of these have been the new station wagons.

These vehicles are basically the regular family station wagon, with certain modifications, including heavy duty transmissions, 60-100 amp alternators with single or dual belts, heavy-duty distributors, special camshafts, heavy-duty clutch and shock absorbers, radio suppression equipment, and special tire mounts.

The New York Fire Department wagons are equipped with the Dodge Economy Slant Six cylinder engine and 8:00x14 nylon tires.

The NYFD added its own additional special equipment. The vehicle can carry a detail of eight men or can quickly be converted to transport two stretchers and three persons in the front seat. There is up to 95.8 cubic feet of cargo space available.

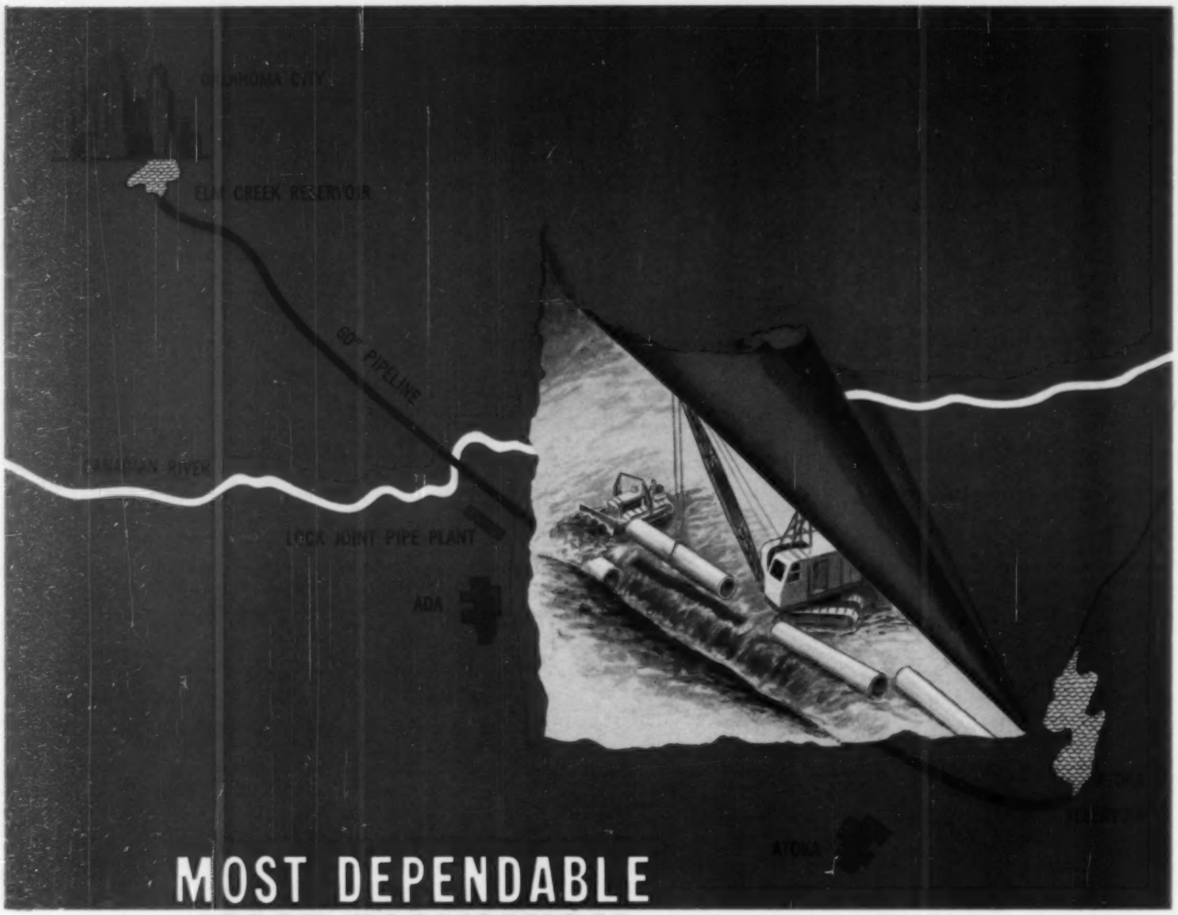
Some observers note that by this trend, fire-fighting has come the full circle. It started with horsedrawn wagons and now uses 300-horsepower wagons. ◄◄

Miami Airport's Fire Defense

The Dade County Port Authority has dedicated a $160,000 fire station in the center of Miami International Airport. It has offices, dormitories, training rooms and space for six fire trucks. A direct line from the airport control tower turns on all lights, triggers an alarm and raises the outside doors.

The department is divided into two teams of 14 men each who serve alternate 24-hour shifts. While on duty, the men cook, eat, sleep, study and maintain equipment in the station area. They cannot leave without tower clearance, as the station is surrounded by runways. The men answered 3,016 calls in 1960. ◄◄

The fire station in the center of the 2,866-acre Miami International Airport, houses the chief's Ford, a dry-chemical jeep, a Walter crash-and-rescue truck, a four-wheel-drive Automotive Co. crash-and-rescue truck, and (at the right) a specialized pumping engine on an International chassis. A Ford crash-and-rescue truck does not appear in the picture.



MOST DEPENDABLE
MOST ECONOMICAL
FOR THE
LONG
HAUL!

When a city must go 100 miles for a sufficient supply of potable water, authorities demand a reliable medium for its transmission to the community. That's why Oklahoma City selected LOCK JOINT PRESTRESSED CONCRETE EMBEDDED CYLINDER PIPE to carry its vital supply of pure water from Atoka Reservoir to the state's capital.

The long life, permanent high carrying capacity and negligible maintenance inherent in Lock Joint Concrete Pressure Pipe make it ideal for the construction of this 60" aqueduct —the longest continuous water line ever built in the United States.

Economically, Lock Joint Pipe is also ideal. In addition to long term savings effected in low pumping costs and minimum maintenance, the production of the pipe locally at Ada will plow back more than $6,000,000 into the economy of the area through the use of local labor, services and materials.

LOCK JOINT PIPE CO.
Established 1905
P. O. BOX 269, EAST ORANGE, N. J.

Member of The American Concrete Pipe Association and The American Concrete Pressure Pipe Association

CONCRETE PRESSURE, SEWER, CULVERT & SUBAQUEOUS PIPE: PLASTIC PIPE AND PROTECTIVE COATINGS

Welding together the five-foot sections is a field job.

Workmen lower the stainless-steel screen into the well hole.

Stainless-Steel Well Screens

Stainless steel, long a familiar sight in kitchens and bathrooms at the termination of water's journey from supply to user, now performs a role at the opposite end of this trip in Canton, Ohio. The Municipal Water Works is sinking six new 150-foot wells which incorporate stainless-steel well screens.

The perforated units, each five-feet long and 26 inches in diameter, consist of hollow cylinders which line the barrel of the wells, maintain the walls intact and admit water through thousands of slotted holes.

A point-by-point comparison of this with other materials discloses the following differences:

- **Thickness: Because stainless steel is strong, filter units made of Republic Steel's type 304 need be only ¼-inch thick, compared with ½-inch for some other materials, a substantial weight-saving.**
- **Perforability: Because stainless steel possesses a tensile strength of 85,000 psi, it withstands the rigors of well use with comparatively more slotted holes, each of which is 5/16-inch wide and 1½-inches long.**
- **Corrosion resistance: Stainless steel is impervious to all known soil-bound acid and mineral attacks.**

The top 70 feet of each of Canton's six new wells incorporates a 38-inch outer casting to introduce and pack the graded jacket of silica gravel. The bottom 80 feet eliminates this outer casing. The contractor drives the screen into the well hole using a protecting shoe over the bottom end to avoid filling the pipe interior and to prevent edge damage.

The six new wells will augment Canton's two other major fields to supply water demand which now reaches 20 mgd on an average day. Peak demands total 25 mgd. The Northeast supply includes six wells 26 and 30 inches in diameter and from 150 to 200 feet deep. The Northwest supply furnishes water from three Ranney collectors, 13 feet in diameter with 6,000 feet of eight-inch horizontal screens.

The additional capacity of 16,800 gpm from the six new wells in the field will fill our needs for the next 40 years. To check water withdrawals and water-table variations, we have instrumented the area with a network of 37 observation wells and a gauge on Sugar Creek which flows through the field. The United States Geological Survey, the Ohio Division of Water and our ground-water consultant cooperated in this effort.

When the new wells and the distribution mains to deliver this water to the system have been completed, we expect a revaluation by the Fire Underwriters to result in lower insurance rates for the people of Canton.

A. E. Ransom
Water Works Superintendent
Canton, Ohio

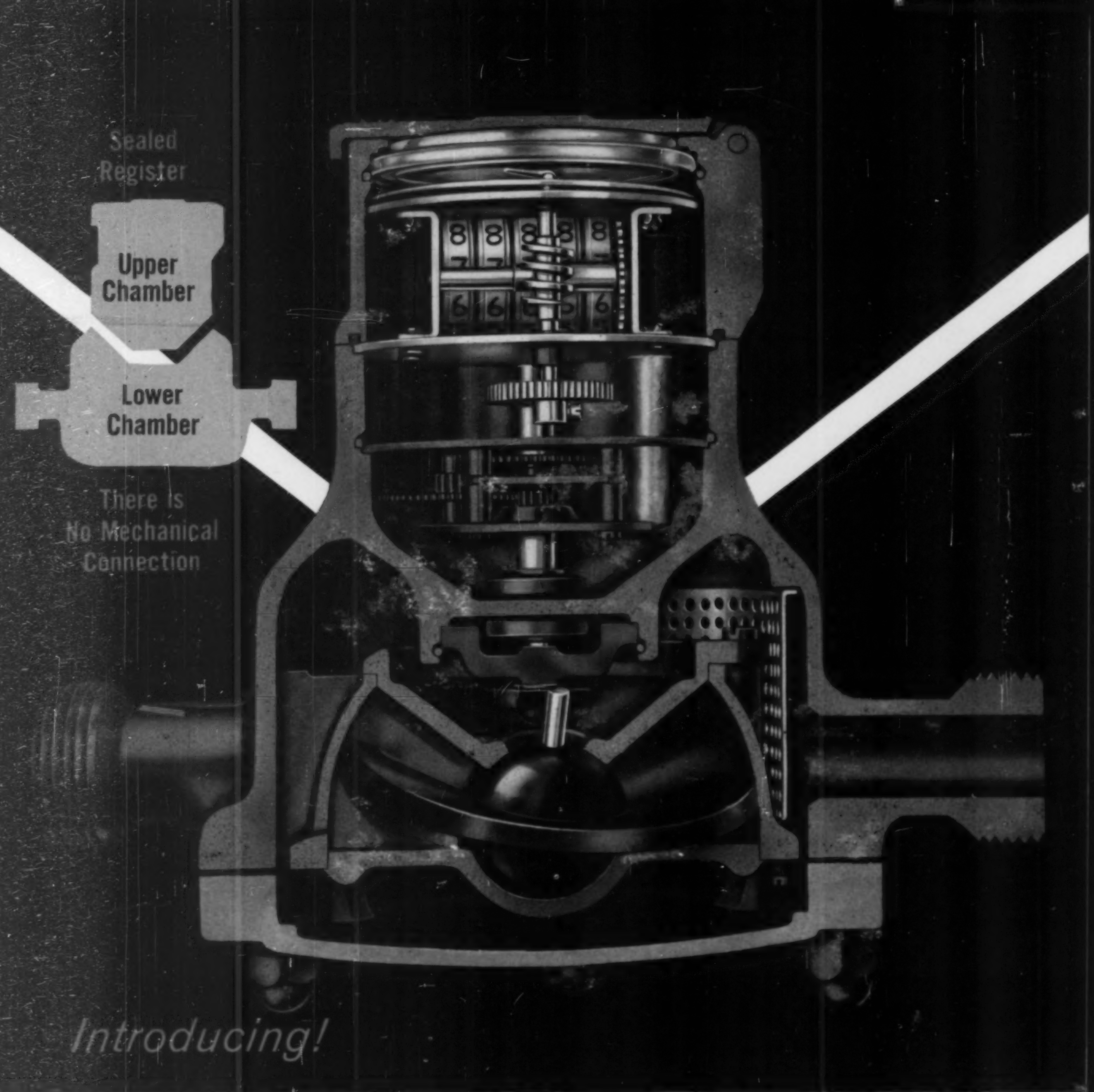
Water Rates For Construction

We charge contractors for the water used in construction on a reasonable, workable basis. All pay a $2 permit fee plus use charges which vary according to the type of construction.

Residential builders remit a minimum monthly charge of $1.50 for a five-eighths-inch meter or $2.50 for the three-quarter-inch size. Constructors of large buildings, street paving and similar work pay according to the following schedule:

- **Asphalt rollers—20 cents per 100 square yards.**
- **Brick or concrete manholes—$1 each.**
- **Brick work—10 cents per 1,000.**
- **Concrete, bulk—10 cents per cubic yard.**
- **Concrete curb and gutter—1 cent per lineal foot.**
- **Concrete pavement—1½ cents per square yard.**
- **Plastering—40 cents per 100 yards.**
- **Sidewalks—3 cents per square yard.**
- **Stone masonry—6 cents per perch.**
- **Wetting subgrade—$1 per 100 square yards.**

J. J. Hail, *Superintendent*
Water Department
Dubuque, Iowa


Sealed Register
Upper Chamber
Lower Chamber
There Is No Mechanical Connection
Introducing!

HERSEY

Magnetic Drive Disc Water Meter–Model MHF

Featuring Simplicity of Design

- No Fogging
- No Stuffing Box
- Standard Change Gears
- Can Be Field Serviced
- Extreme Sensitivity and Life-Long Accuracy
- Frost Protection or Bronze Bottom
- Sizes: ⅝" and ⅝" x ¾"

Hersey-Sparling
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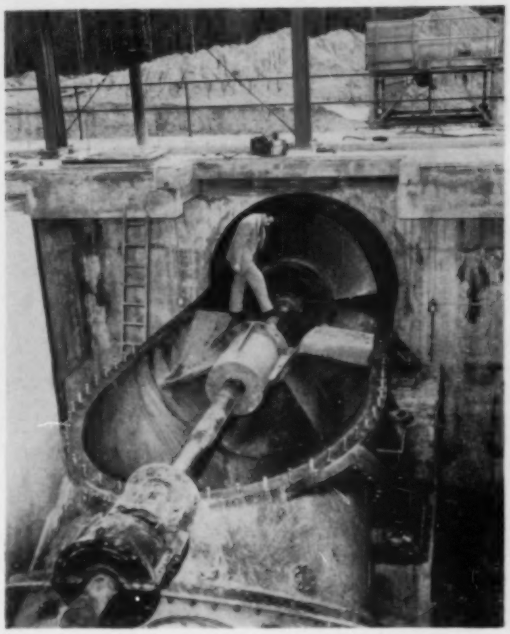
Branches: Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Kansas City, Mo., Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle

← *The 116-inch pump propeller dwarfs an employee.*

→ *An inspector checks the pump assembly during construction.*



A Hurricane-Proof Pumping Station

To protect Lake Charles, La., from flooding, the new Kayouche Coulee pumping station incorporates four 116-inch-diameter Fairbanks, Morse pumps which use diesel fuel so that a hurricane cannot interrupt the power supply when it is most needed.

Lake Charles, located 40 miles east of the Texas-Louisiana border and 40 miles inland from the Gulf of Mexico, suffered a tragic flood in 1953 when heavy rains caused the bayous and coulees to back up into the city. Since some of the houses are only eight feet above sea-level, the floodwaters which reached Elevation 14 severely damaged these structures. The adjacent Chennault Air Force Base also suffered inundated runways.

In 1955 an $8,170,000 drainage issue passed by a resounding majority which reached 8 to 1 proportions. The funds provided have constructed the new pumping station and strengthened the drainage facilities within the city. While the largest line in the old system was 30 inches in diameter, some new ones included drainage pipes as much as 105 inches in diameter. Engineers were able to use many of the old lines, when they were cleaned, supplementing them with the new, larger ones which can carry off the results of a ten-inch rainfall within four hours.

When the flood gates are shut, the drainage inside a 12-square-mile area flows to the new pumping station where four gigantic pumps can discharge a total of 2,326,600,000 gallons in 24 hours at a head of four feet. This amount of water is 232 times the average daily water use of the city of New Orleans, and could flood 7,142 acres of land one foot deep.

The pumping station itself cost $1,971,026. The top floor contains four opposed-piston diesel engines which operate at 750 rpm. Under the steel-mesh floor repose four 116-inch cast-iron pumps. Each has a cast-steel propeller and 12-foot-diameter suction and discharge pipes. When excessive rainfall such as that from Hurricane Carla causes the level in the coulee to rise, the pumps begin the task of sending the excess water into English Bayou, beyond the city, to prevent backwater floods. From this point, the water drains to the Gulf of Mexico without further difficulty to Lake Charles.

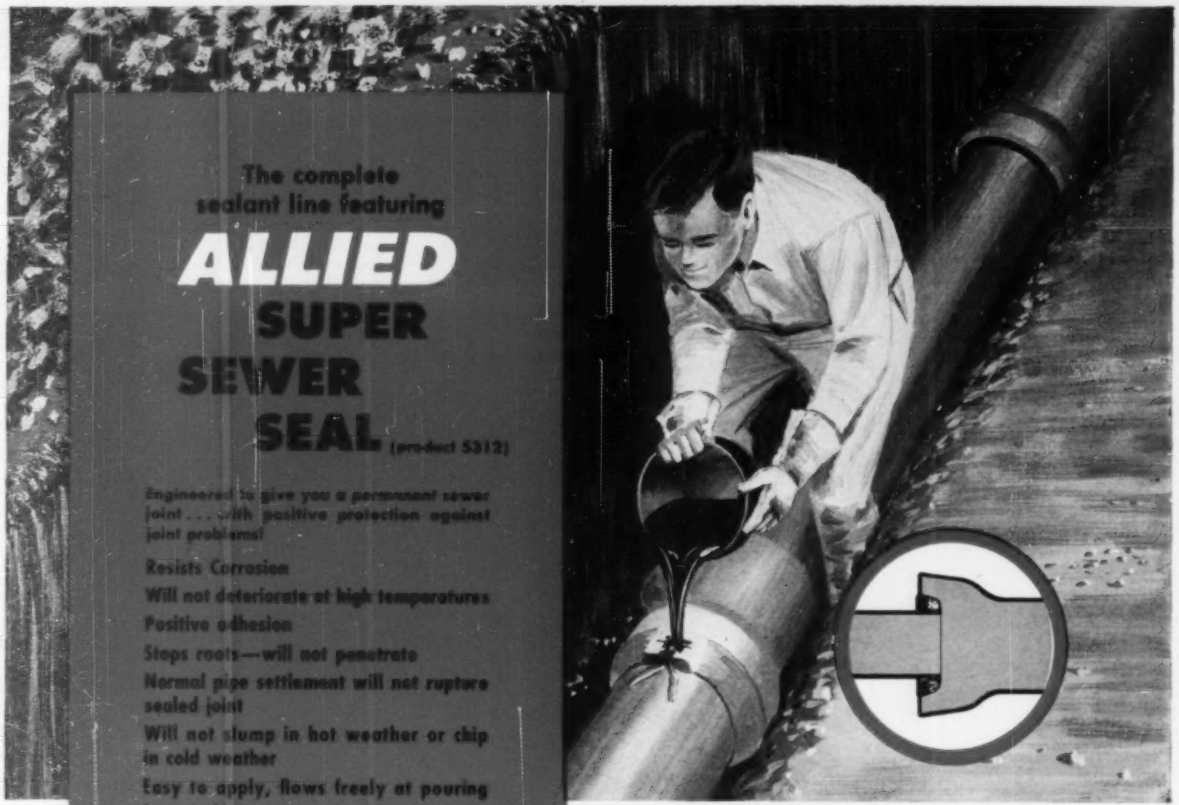
Engineers for the project were Rodney M. Vincent and D. W. Jessen and Associates, Lake Charles. ◄◄

Shock Absorbers Protect Chlorination System

The Middlesex County (N. J.) Sewage Authority's central treatment plant utilizes a ten-unit chlorination system to sterilize sewage before discharging it into Raritan Bay. Three years ago Chief Engineer Sol Seid installed 30 B. F. Goodrich Flexseal connectors in the chlorine piping system to eliminate the common problem of pipe fittings shaking loose.

The connectors, short lengths of special rubber hose, take constant shocks from water pressure when pumps activate the chlorination system and also absorb vibration caused by the vacuum-type chlorine-gas injectors. After three years of use, the connectors still give excellent service and appear virtually indestructible. They resist damage from the highly corrosive solution.

The sewage-treatment plant, built at a cost of more than $32,000,000 serves Union and Somerset counties as well as Middlesex. It has a design capacity of 78 mgd. Unlike most plants, it uses reclaimed sewage instead of tap water to operate the chlorinators. Pumps supply the reclaimed sewage to the chlorinators at 65-psi pressure. Facilities permit both pre- and post-chlorination. The feed rate averages about 54 ppm. ◄◄



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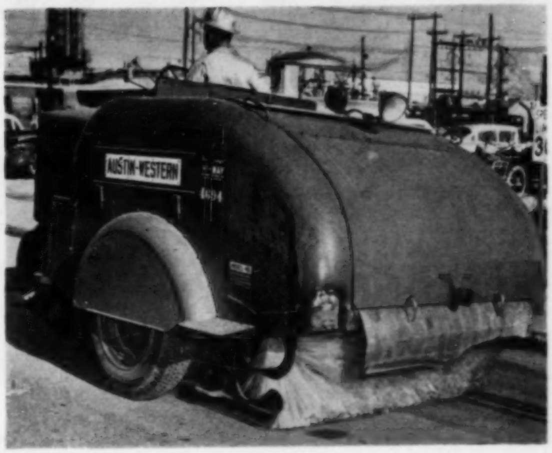
Test Proves Durability Of Street-Broom Fiber



After 340 machine hours and 835 miles of sweeping, a new sweeping broom of Escon polypropylene still does a good job of cleaning. Test data indicates that the broom can cover up to 1,300 miles before its efficiency is impaired and can be worn down to a diameter of about 22 inches before being replaced. The Enjay Chemical Company, manufacturer of the resin used in producing the new broom fibre, conducted the tests on streets of its Baytown, Texas, refinery. The bristle manufacturer is Keystone Plastics, Newark, N. J. ◄◄

The Answer to Driveway Complaints

Because of the resourcefulness of two Public Works Department employees, a tricky snow-plowing device is now in use which eliminates the resident's task of shoveling windrowed snow from his driveway entrance after the street is plowed.

The gadget is a "snow gate," a fabricated attachment placed on several of the city's graders by shop personnel. While the grader plows the street with its front blade scooping snow and carrying it to the curb line, the operator lowers the gate as he approaches a driveway entrance. The gate gathers the scooped snow and withholds it from the entrance as the grader passes. When he goes beyond the entrance the operator raises the gate and drops the accumulated snow along the curb.

The Public Works Department receives both praise and snorts on account of this clever contraption. The praise stems from those whose driveways the gate protects. The snorts come from folks who find it necessary to clear excess snow from their entrances because they did not receive this benefit.

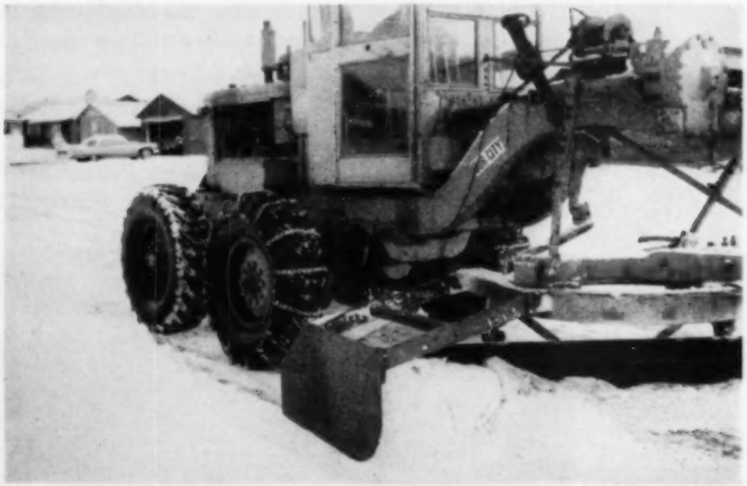
Unfortunately, we cannot install these gadgets on all motorized patrol graders. The four graders which have mechanically operated blades also include the gates. The other four machines which are hydraulically operated do not.

Power Take-Off Necessary

The reason is that this type of gate functions satisfactorily from a power take-off such as found on the L-W Adams and Caterpillars. It is not suitable for graders with full hydraulically-operated systems. This difficulty does not indicate a weakness in the motor patrol; rather it is the suitability of this type of gate to a particular kind of system.

When heavy snowfalls demand the use of all graders at the same time, some sections cannot receive this novel driveway service. The department endeavors to distribute this extra treatment equally over a period of time by varying the grader schedules in the various residential areas.

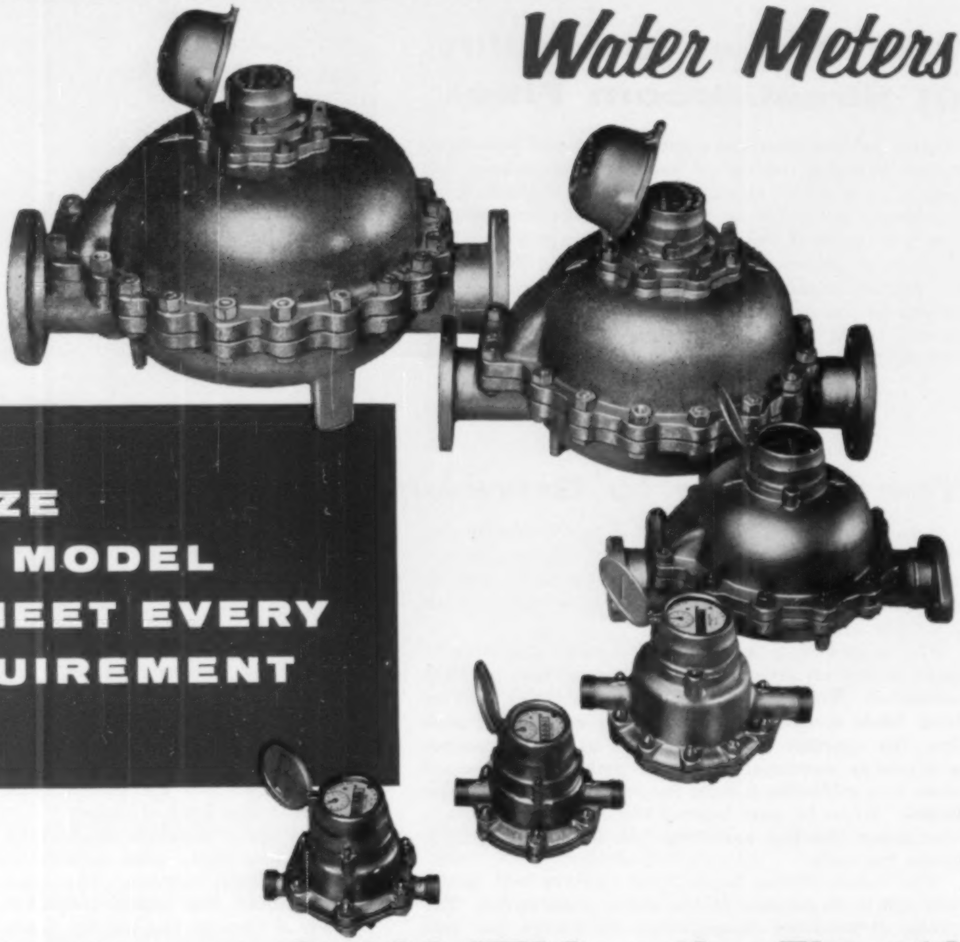
ROBERT B. SMITH
Director of Public Works
Anchorage, Alaska



Anchorage driveways are protected during plowing by this ingenious snow gate.

AMERICAN

Water Meters



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No Fishing—Except for Children

FISHING PIER
NO ADULTS ALLOWED
UNLESS ACCOMPANIED
BY CHILDREN

Opening the Children's Fishing Pier.

Dreams do come true. Just ask Perry Gorchov. But, as the spunky 13-year-old Miami lad well knows, sometimes it takes more than wishing to make a dream materialize. Like most boys his age, Perry loves to fish. Until recently, however, "No fishing" signs, posted around the waterfront a few blocks from his home, frustrated his angling ambitions.

Two years ago, Perry decided to do something about the situation. Armed with high hopes and a petition signed by 40 of his friends, he appeared before the Miami City Commission and suggested that a fishing pier for youngsters be built at Dinner Key.

When school let out this summer and the pier was not in place, Perry followed up with a second appeal to the busy city fathers. Several weeks later construction crews appeared behind the city hall and began to sink pilings for the pier of Perry's dreams.

Designed by the city engineering department, the new $6,000 T-shaped structure opened on August 14th, with Perry cast in a leading role at the dedication ceremonies. After joining with city officials in the traditional ribbon-cutting (with a fish net appropriately substituted for ribbon), the youngster received from Miami Vice-Mayor Henry L. Balaban a certificate of appreciation from the city for "his efforts on behalf of all young fishermen of the area." Then as the crowd looked on longingly, some 50 youngsters dashed onto the pier to try out their new present from the city.

So there won't be any doubt about for whom the pier is intended, a sign at the entrance warns: "No adults allowed unless accompanied by children." Wooden railings surround the deck of the pier which extends 70 feet into the water and has a 50-foot T-head.

Other built-in safety features include a railing around the base of the pier at water level and four ladders leading to the deck for over-anxious young anglers who might topple into the water.

Floodlights aid fishing after sundown. In addition, a table, a recessed sink and a water faucet provide comparatively luxurious facilities for the neophyte anglers. Miami youngsters now have one of the finest and safest fishing facilities in the nation—thanks to a boy and a dream, and a city that understands. ◄◄

Swimming-Pool Ordinances

Back in 1955, the Olivette, Mo., Health Department, under the guidance of its director, Dr. E. V. Lambrechts, began the research which was to lead to the adoption of the first comprehensive residential swimming-pool ordinance in the United States. By 1956, with the help of many health departments, commercial builders, engineers, architects and building commissioners, plus the cooperation of the National Swimming Pool Institute, the ordinance became law. Today similar ordinances all over the world utilize its basic principles. Olivette has had requests for copies from all over this country, Europe, Mexico, Canada and South America. The N.S.P.I. saw fit to award the city an Honorable Mention Certificate for this pioneering work. Because fencing was such a controversial requirement the term protective barrier was used, as it allows other methods, such as a multiflora rose hedge, to be substituted for rigid fencing where this is objectionable.

Olivette has enjoyed good cooperation from installing contractors.

The law has been a protection both to the home owner and the builder. Olivette's law combines construction safety and health features in the same ordinance.

Residential swimming-pool installation has flourished in the city despite usually severe winters. Approximately one in every 25 homes has a swimming pool, one of the highest percentages in the state.

Because of a great difference in operation of commercial swimming pools, a companion piece of legislation has been enacted by the City Council. Two years of research and consultation with various health departments, pool architects, engineers and contractors went into the preparation of the new law. The Greater St. Louis Swimming Pool Association, a member group of the N.S.P.I., reviewed and approved these provisions.

Since new materials, methods and swimming pool accessories are available, this law is written to allow the use of such facilities. For example, pool skimmers, properly placed and in adequate numbers, do a better job than scum gutters and are optional in pools with up to 6,000 square feet of surface water.

The city will supply a free copy of either ordinance to interested cities and will welcome comments. ◄◄

Letters To the Editor

Newburgh's "Revolution"

This is an approving pat on the head for your timely and well-written editorial on "The Newburgh 'Revolution.'"

Like most people, we have been hearing much shouting, pro and con, about Newburgh's relief policies. But yours is the first article I've seen that contained so much information.

And you managed to do this without falling into the usual emotional trap of pointing with pride, or viewing with alarm.

George D. Billings
Public Relations Director
G. H. Tennant Company
Minneapolis, Minn.

Arson Investigation

From time to time you have mentioned the work of our fire department in the field of arson investigation. Consequently, you may be interested in seeing the attached editorial from one of our local papers about a fire that involved a particularly bad crime.

This editorial makes two important points: first, the work of the arson-investigation team has resulted in bringing about a very excellent spirit of cooperation between the police and fire departments; and second, that continued emphasis and training in arson investigation seems to pay off in direct proportion to the effort devoted to this work.

Gerald W. Shaw
City Manager
Greenville, S. C.

Editor's Note: The editorial congratulates the police officers and firemen for discovering that what appeared to be a death in an accidental fire was, in fact, murder and arson.

New York Study Links Driver Deaths to Drinking

Among drivers rated as responsible for their fatal accidents in New York City, 73% had been drinking, compared to only 26% of the motorists exposed to the same type of traffic conditions but not involved in accidents.

This is the report of a comparison of drivers killed in accidents in

(Continued on page 38)

What Cities Are Doing About Air Pollution

Cleaner Air Week

October 22nd through 28th will be Cleaner Air Week this year. The event is sponsored by the Air Pollution Control Association. Charles Howison of Cincinnati is the originator and the Chairman of the Cleaner Air Week Program for APCA. Information about Cleaner Air Week may be obtained from Mr. Howison at 2901 Union Central Building, Cincinnati 2, Ohio.

New Post

Eldon J. Crothers has been appointed to the newly created post of municipal air-pollution-control engineer in Seattle, Washington. Mr. Crothers had been associate plan examiner in the City Building Department. . . . The Washington State Health Department has erected an air sampling station on the roof of the Yakima Courthouse, to evaluate the air quality of that city. The machine measures particulate matter caused by smoke and dust.

Oil Refineries Clean Up

Benjamin Linsky, Control Officer of the Bay Area (San Francisco) Air Pollution Control District, has announced that oil refineries there will spend about an additional $8,000,000 to $10,000,000 to bring their operations into full compliance with air-pollution regulations by the end of 1962. This is in addition to more than $10,000,000 which the refineries spent for air-pollution-control equipment before the adoption of the new regulation in May, 1960. Under full compliance by the oil industry, a 60 to 80% reduction in dusts and droplets, plus a considerable reduction in sulfur-oxide effects, is anticipated.

Largest of its Kind

A major research project, the largest of its kind yet undertaken in the field of air pollution, is now underway. It is a joint effort of the United States Public Health Service, the Los Angeles County Air Pollution Control District and the University of Southern California to observe the effects on laboratory animals—mice, guinea pigs and rabbits—of breathing the same air breathed by people in Los Angeles County. The contaminants of primary interest are those specifically associated with automobile exhaust—hydrocarbons, oxidants, carbon monoxide, oxides of nitrogen and certain particulates. While the test animals breathe the air at special sites located at varying distances from the heavily traveled throughways, a control group of similar animals will be living in purified air from which the contaminants have been removed.

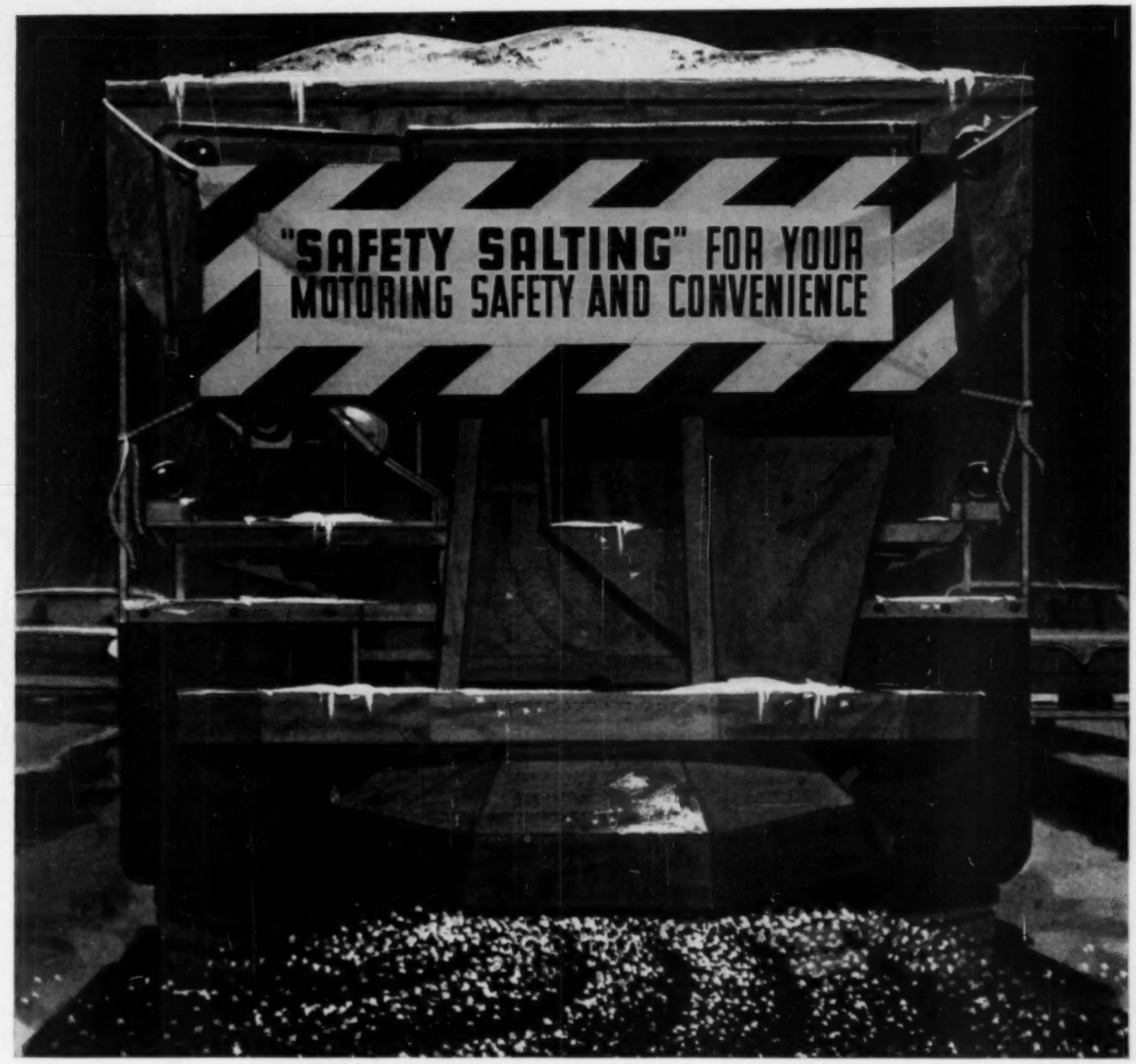
Sussman Appointed

Victor H. Sussman is head of the new Air Pollution Control Division of the Pennsylvania Department of Health. Health Secretary Charles L. Wilbar said the new unit was established because of the "increasing importance" of the problem.

New Ordinance

An air-pollution-control ordinance went into effect in June in LaFayette, Ind. It is aimed primarily at reducing smoke pollution caused by industries, apartment houses and large business concerns. A Bureau of Air Pollution Control, headed by the fire chief, has been established under the Board of Public Works and Safety.

—Prepared by Kenneth Kowald



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The Morton Safe-T-Salt* Ice Control Program can help you accomplish two important jobs this winter . . . public safety and public relations!

Streets are safer when they are salted with Safe-T-Salt, because it is a screened and graded rock salt that gets rid of dangerous ice and snow in the quickest, safest, most economical way possible.

The name "Safe-T-Salt" was developed to explain this job to the public. As you know, too many uninformed citizens complain about de-icing programs every winter. The "Safe-T-Salt" name will cut down those complaints by emphasizing the safety value of salting treacherous pavements . . . will keep the public aware of your efforts to reduce winter driving hazards.

The truck banner in the illustration above represents one way that safety salting can be made popular. These banners are available free to Morton Salt customers. Your Morton representative can supply them and other material . . . as well as furnishing you with helpful publicity features for your local newspapers, explaining the value of de-icing programs. He'll be glad to help you start planning *now* for a safer and happier winter.

FOR MORE INFORMATION ON MORTON
SAFE-T-SALT, MAIL THIS COUPON TODAY

Please have a Morton Salt representative call me for an appointment to explain all the advantages of your Safe-T-Salt program.

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The development of the line of Mueller installation machines and methods has progressed hand-in-hand with the development of the broad line of Mueller Valves and Fittings. Every improvement in this design and work-matched line of products has proven to be beneficial to the Water Works industry in labor saving, time saving, safety, improved operation and operating dependability.

The installation and repair methods briefly illustrated here are the result of over 100 years of Mueller Co. research and development in the water industry.

The complete line of Mueller products offer economical solutions to many problems associated with expansion and rapid growth. Standardization with Mueller "main to meter" products and methods can result in long-term time and cost savings.

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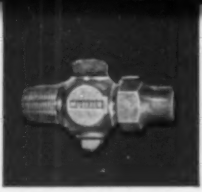
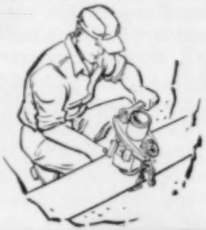
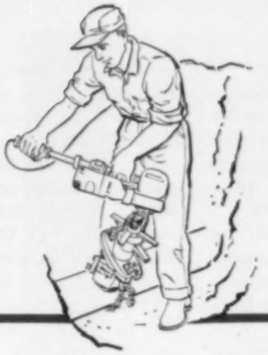


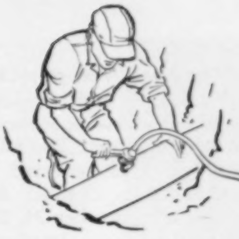
Making service connections with Mueller B-100 Machine and Mueller Corporation Stop.



Lower section of machine is secured to main. Boring bar assembly with drilling and tapping tool is assembled to lower section.

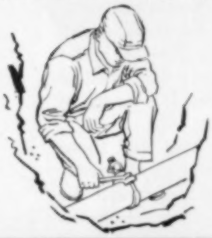


Main is drilled and tapped in one operation. Boring bar assembly is removed and tool is replaced by corporation stop. Machine is reassembled and corporation stop is inserted.

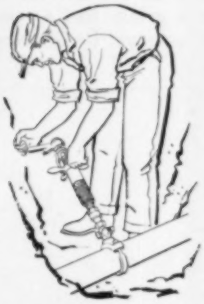


Machine is removed and service connection is made.

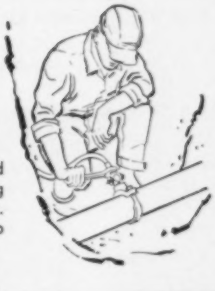
Installing Mueller Corporation Stop to thin walled pipe with Mueller E-4 Machine and Mueller Service Clamp.



Service clamp is secured to main. Corporation stop is securely threaded into service clamp.

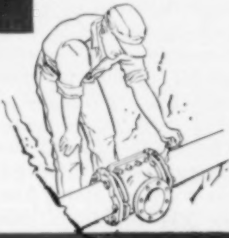


With stop in open position, machine is attached to stop. Tool passes through stop and drills main. Drill is retracted — stop is closed.

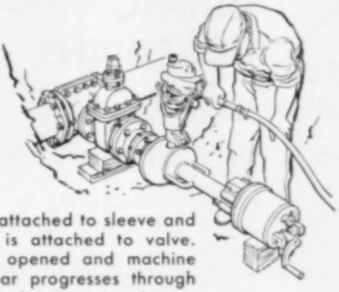


Machine is removed and service piping is secured to stop. Stop is opened to activate service.

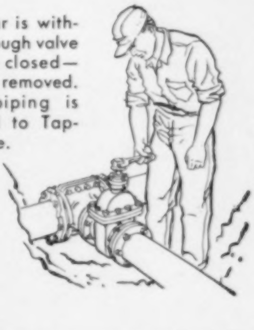
Adding a lateral connection under pressure with Mueller Tapping Sleeve and Valve and Mueller CL-12 Machine.



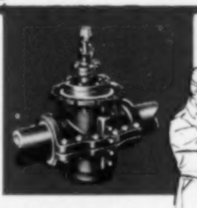
Tapping sleeve sections are secured to main to provide valve connection and to strengthen main.



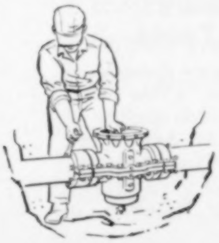
Valve is attached to sleeve and machine is attached to valve. Valve is opened and machine boring bar progresses through valve opening to cut main.



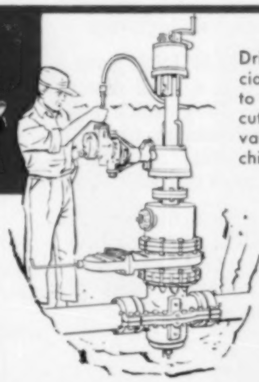
Boring bar is withdrawn through valve —valve is closed— machine is removed. Lateral piping is connected to Tapping Valve.



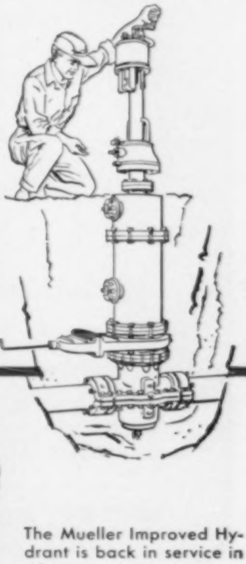
Adding Gate Valve Control under pressure with Mueller Inserting Valves and Mueller CL-12 Machine.



Valve sleeve halves are secured to main to provide strong valve body at point of needed control.



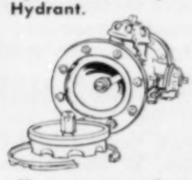
Drilling machine with special slide valve is secured to top of valve sleeve and cut is made in main. Slide valve is closed and machine removed.

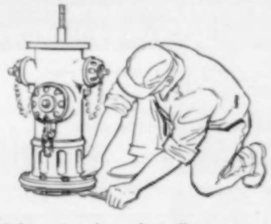


Inserting adapter is secured to slide valve. Drilling machine secured to adapter then inserts gate valve assembly through adapter into valve body.

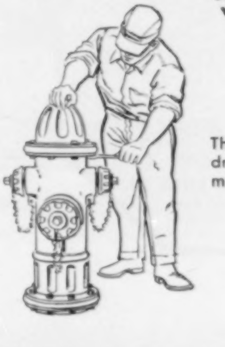
Fast repair of traffic damaged Mueller Improved Fire Hydrant.

Special safety flange has prevented breakage of barrel—special safety coupling has prevented damage to the stem. Both snap off on impact above ground with no loss of water.





With a simple safety flange repair kit, the damaged parts are replaced and the hydrant reassembled.



The Mueller Improved Hydrant is back in service in minutes.

(Continued from page 34)

New York City with non-accident-involved motorists operating under the same conditions. The study, the first of its kind, covered periods from June 1 to October 24, 1959, and June 1 to October 24, 1960.

The study was conducted by James R. McCarroll, M.D., Division of Epidemiologic Research, Department of Public Health, Cornell University Medical College, and William Haddon, Jr., M.D., Director, Epidemiology Residency Program, New York State Health Department, and former Director of the Driver Research Center of the State Health Department—State Department of Motor Vehicles.

The report indicates that the greatest difference between drivers fatally injured and those in the control group was the use of alcohol. Some 46% of the accident-responsible group had blood-alcohol concentrations in the very high 250 mg per cent and over range. In contrast, not one of the drivers in the large control group had a concentration in this range. Under New York State law drivers with a concentration of 100 mg per cent are considered "impaired" and those with alcohol concentrations of 150 mg per cent and higher are considered legally drunk.

Also represented in the fatally injured group, but not in the control group, were drivers of fleeing stolen cars, one driver killed in a drag race and a small group of drivers, all in their fifties, whose accident resulted from their prior medical incapacitation. The researchers pointed out that all of the drivers in these latter categories were sober, and that the occurrence of accidents in the medical group should not *per se* be used in justification of programs of medical license restrictions on the basis of present evidence.

The report also showed that those fatally injured were significantly closer to their homes than were the similarly exposed, but non-involved, drivers, and that almost none of those fatally injured lived outside New York City.

Dr. McCarroll and Dr. Haddon reported that the case group was composed entirely of males. Although few women were driving at the times and places of the predominantly night-time and early morning accidents, males were nonetheless statistically over-represented in the case group.

The fatally injured drivers were not significantly different in age or socio-economic status from the similarly exposed, but non-involved, controls, and no association was found between accident involvement and vehicle age. ◄◄

SIGNALS
AHEAD

TRAFFIC GUARDIANS that work for just $1 a year

Attention compelling by day in black and yellow uniform . . . brilliant at night by reflectorized light, DIE EMBOSSED steel traffic signs are your most economical safety sentinels on streets and highways.

DIE EMBOSSING gives traffic signs a third dimension, *d-e-p-t-h,* which adds an extra measure of visibility to safety . . . the sole purpose of traffic signs.

You are wise to patronize independent, competitive, taxpaying firms that give you a multiple choice of suppliers.

LYLE SIGNS, INC.
2720 University Ave. S.E.
Minneapolis 14, Minn.

NSE SIGNS AND STAMPINGS
P.O. Box 1069
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MIRO-FLEX CO., INC.
1824 E. 2nd St. (Box 514)
Wichita 14, Kans.

GOPHER STAMP AND DIE CO.
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GRIMM STAMP & BADGE CO.
8105 Rosalie Ave.
St. Louis 17, Mo.

ORDER DIRECT FROM THESE MANUFACTURERS

☐ Please send me a copy of your catalog.

☐ Please furnish a quotation on the attached list of traffic signs.

Name________________
Title________________
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New Film Shows Soil-Cement Tests

"Standard Laboratory Control of Soil-Cement Mixtures," a new sound and color 16-mm motion picture of the Portland Cement Association, had its premiere showing at the recent annual meeting of the American Society for Testing Materials in Atlantic City.

The new film describes current ASTM-AASHO laboratory test methods that determine the quantities of cement and field control factors necessary for building soil-cement pavements. It also includes short-cut test methods for sandy soils.

The film is available free on loan in the United States and Canada from the Portland Cement Association, 33 West Grand Ave., Chicago 10, Ill. ◄◄

TAKE A GOOD LOOK

Here's tangible benefits of using an Asplundh Chipper.

- *Considerable savings*
- *Capable performance*
- *Low maintenance*

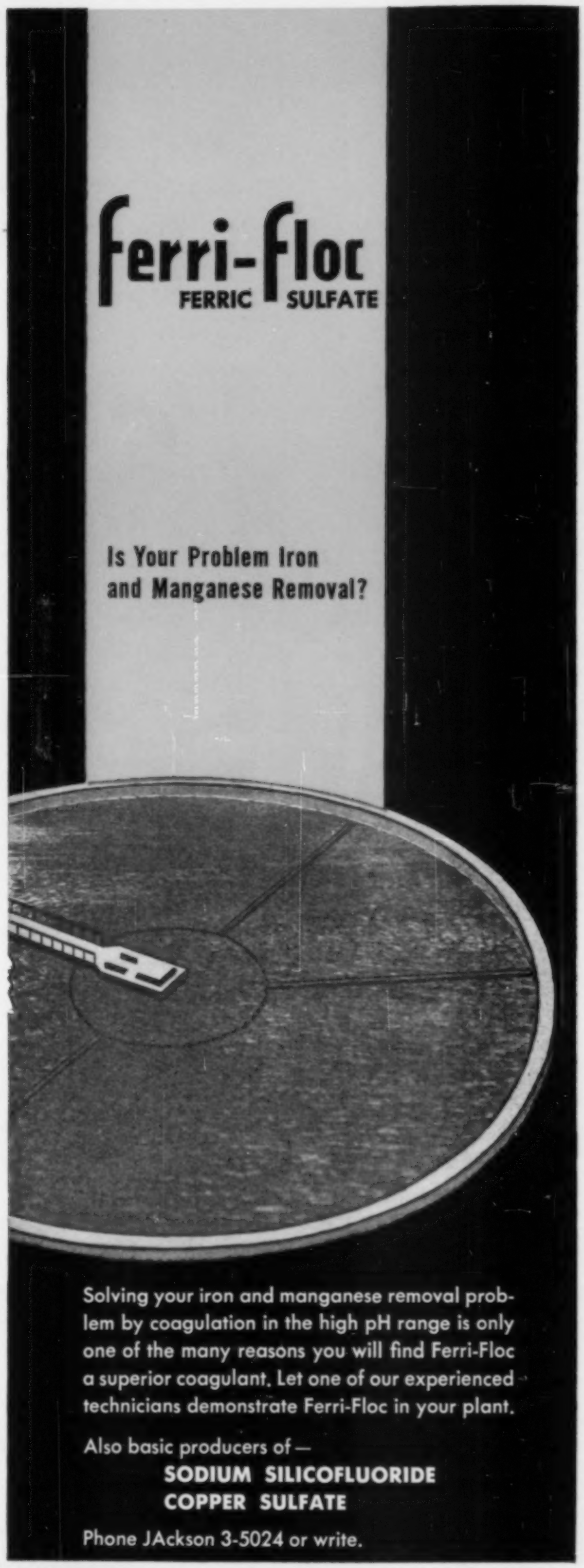
Made by tree men. No brush chipper has been put to such severe test. You get a modern design chipper that combines the on-the-job practicability with a pleasing appearance that's sure to create better public relations.

Take a good look. A free no-obligation demonstration will give on-the-spot information. Observe the taper blades in action—the 300 lb. flywheel providing constant, fast, uniform chipping action—the ease of tracking.

Write today for your illustrated specifications on the Asplundh Brush Chipper.

ASPLUNDH CHIPPER COMPANY

HAMILTON STREET, CHALFONT, PENNA.
MFG. DIV. OF ASPLUNDH TREE EXPERT CO.



Ferri-Floc

FERRIC SULFATE

Is Your Problem Iron and Manganese Removal?

Solving your iron and manganese removal problem by coagulation in the high pH range is only one of the many reasons you will find Ferri-Floc a superior coagulant. Let one of our experienced technicians demonstrate Ferri-Floc in your plant.

Also basic producers of—

SODIUM SILICOFLUORIDE
COPPER SULFATE

Phone JAckson 3-5024 or write.

TENNESSEE CORPORATION

612-629 Grant Building, Atlanta 3, Georgia

"All you're gonna do is scare the fish cousin Ferd... you ain't goin' to find no leaks in them joints"
P. WEBB

U.S. cast iron PIPE FOR WATER, SEWERAGE AND

not a leak in a lakeful!

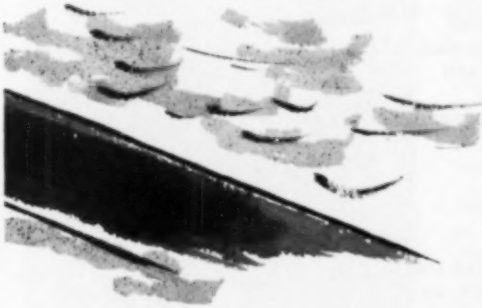
The joints on USIFLEX® Boltless Flexible Joint Pipe are bottle-tight. Joint is made up with a moderate thrust to move ball past self-sealing gasket in socket. Rugged retainer ring locks joint against pull-out during installation and in service. And no wrenches, bolts or nuts to worry about.

Underwater jobs are never easy. But Usiflex simplicity, speed and ease of handling make them almost a pleasure. Want to cut costs, save time and labor next time you have a tough underwater job? Call or write today for illustrated technical brochure on Usiflex.

U. S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A Wholly Integrated Producer from Mines and Blast Furnaces to Finished Pipe.

Makers of TYTON JOINT® Pipe.

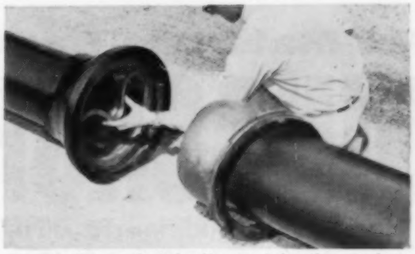


USIFLEX®

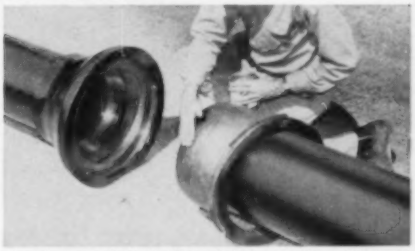
BOLTLESS FLEXIBLE JOINT* PIPE

*U. S. Patent No. 2,564,938

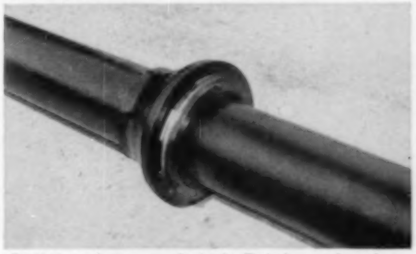
INDUSTRIAL SERVICE CAST IRON®



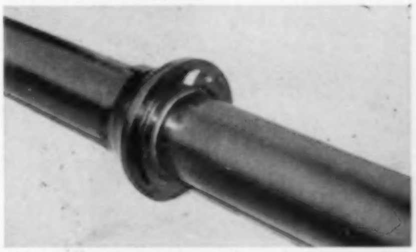
1 Insert the gasket in its seat in the socket. Forming gasket loop helps initial stage of seating. Release of loop allows gasket to spring into the gasket seat where it is securely held.



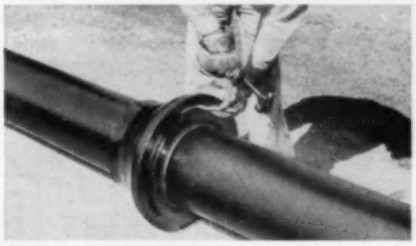
2 Apply special Usiflex lubricant to the ball and inside surface of seated gasket in socket. After lubrication, ball is ready to be pushed into socket.



3 Ball has been socketed. Retainer ring lugs have been lined up with recesses in bell and retainer ring is ready to be moved into the bell and rotated.



4 After insertion and rotation of retainer ring in bell, the lugs on retainer ring are in back of and in register with internal flange segments in bell. Lead lock is partially inserted into recess between the bell and retainer ring.



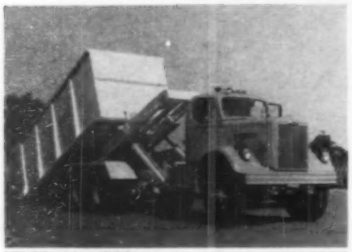
5 Lead lock completely inserted in recess is being caulked in place by hammer blows on a wide caulking iron.

For Materials Handling or Refuse Collection

DINOSAUR + DINOMASTER

Handles (in addition to DINOMASTER) containers eight through 40 cu. yd. capacity and over

Besides serving DINOMASTER, the DINOSAUR picks up huge loads in big capacity containers . . .



extremely heavy materials in smaller containers . . .

. . . and can even handle two containers at a time for additional flexibility.

When mounted on DINOSAUR, provides "No-Container-Haul" Service for refuse containers, one through eight cu. yds.

DINOSAUR picks up DINOMASTER hydraulically for refuse container service.

DINOMASTER engages loaded container and lifts it into emptying position.

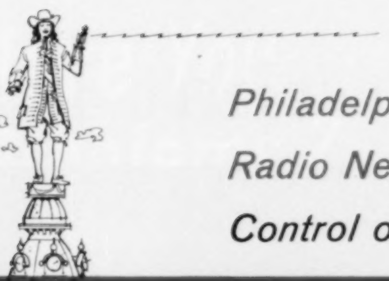
Contents fall into body where up to 85,000 lb.* pressure packer plate compresses material to a fraction of its former volume.

*On 30 yd. Model

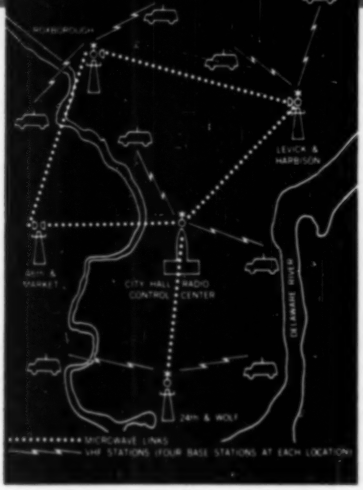
PART OF THE
DEMPSTER
DUMPSTER
SYSTEMS ®

Mfd. Only By
DEMPSTER BROTHERS
Inc.
Dept. AC10, Knoxville 17, Tennessee

WRITE TODAY FOR COMPLETE INFORMATION



Philadelphia Installs Ultra Modern RCA Radio Network... Gains Split-Second Control of its Police Patrol Fleet


ROXBOROUGH
LEVICK & HARBISON
46th & MARKET
CITY HALL RADIO CONTROL CENTER
DELAWARE RIVER
24th & WOLF
MICROWAVE LINKS
UHF STATIONS (FOUR BASE STATIONS AT EACH LOCATION)

This network of base stations can be operated as independent regional networks, or joined for city-wide service.

Completely equipped Master Control Room at City Hall. Unique car-in-use display board (in background) automatically indicates police cars in service.

With this new RCA communications system, Philadelphia has split-second control of its patrol fleet and is able to dispatch police action immediately to any area of the city.

Sixteen base stations (at four key locations) blanket the city, greatly increasing the speed of police radio traffic. In each area, two of the base stations serve police channels, one serves a detective channel, and the fourth is reserved for emergency and Civil Defense communications. The entire city can be covered from any one of these regional stations.

Philadelphia's Network Comprises:

570 RCA UHF 2-Way Radios in police patrol, emergency and other vehicles.

Standard RCA CW-20A Microwave Radio Relay System for remote operation and control of base stations.

RCA transistorized public address amplifiers and external loudspeakers for 250 vehicles.

Multiplex equipment for simultaneous operation of four base stations transmitters in each area.

Special alarm circuits operated by microwave.

For further information contact your RCA Communications Specialist, or send coupon.

The Most Trusted Name in Radio

RADIO CORPORATION OF AMERICA

RADIO CORPORATION OF AMERICA
RCA Telecommunication Center, Dept. A-4
Meadow Lands, Pa.

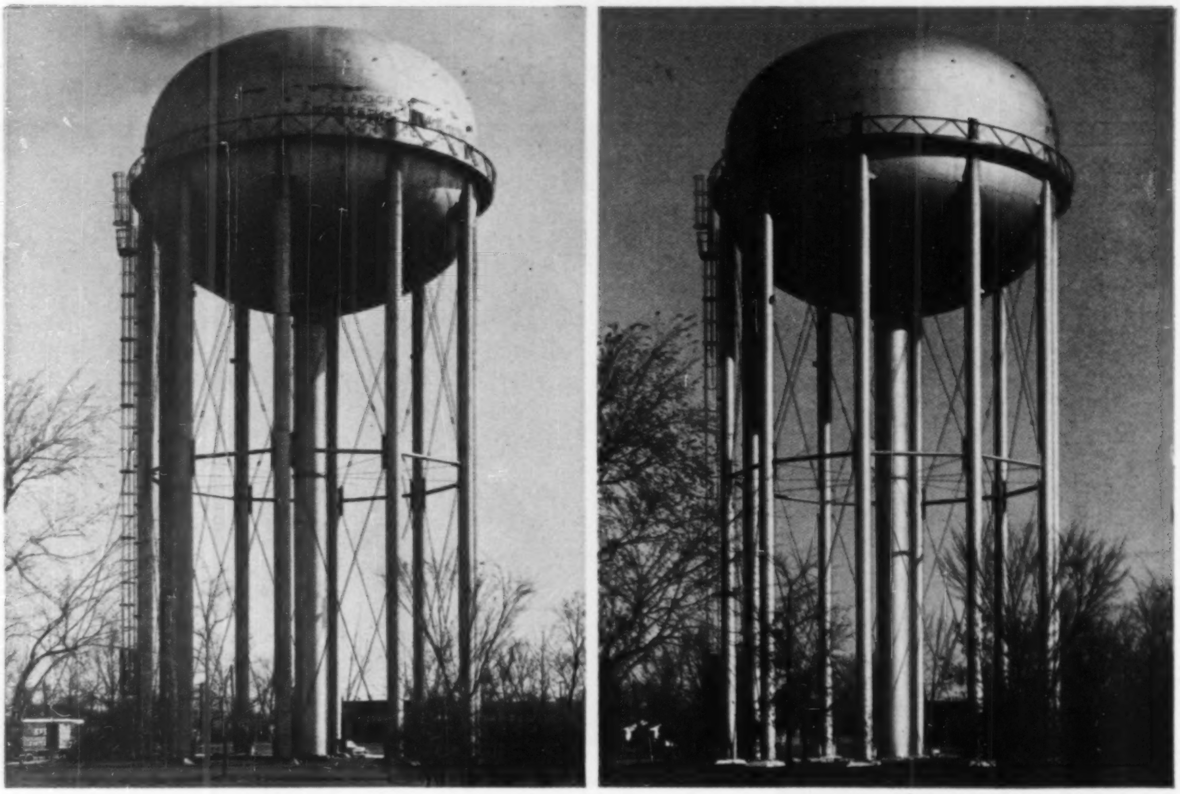
☐ Please send me FREE literature on the new RCA Transistorized "LD" Mobile Radio.

☐ Have RCA Communications Specialist contact me and explain why this is today's best value in 2-way radio.

NAME________________ TITLE________
ORGANIZATION________________
ADDRESS________________ PHONE________
CITY________________ ZONE________ STATE________

SILICONE NEWS from Dow Corning

Found: a paint that lasts



Silicone-based paints last longer; reduce maintenance time and costs

These two pictures emphasize the stubborn fight that maintenance coatings based on Dow Corning silicone resins put up against severe weathering conditions. Located in a northern industrial city, this water tower is constantly exposed to an army of paint killers — summer sun, winter sleet, smoke, rain, *plus* a corrosive chemical laden atmosphere.

At left, the tower is shown two years after it was painted with a conventional organic coating that withstood severe weathering during this period. Rust and corrosion marred its appearance and promised even greater damage. Using organic paints it was necessary to paint the tower at least every two years, a costly, almost continuous job.

Now, see how a silicone-based paint has cut this maintenance process in half. At the right, the tower is coated with an aluminum pigmented silicone-alkyd. But this paint job was done two years ago! The tower is still gleaming bright and completely protected. And maintenance men predict it will stay that way for several years more. The savings in time and money are obvious.

Beat high heat! Such a silicone-based coating can also be readily applied to surfaces that run hot, such as encountered on industrial stacks, mufflers, furnaces. Blistering, peeling, rust and corrosion are prevented; need for costly repainting and — in many cases — expensive replacement is greatly reduced.

Lasting colors, too. Silicone-based paints are now available in many colors . . . colors that stay put and don't fade. This means you can carry your color-coding on hot equipment for greater safety and efficiency while improving the overall beauty of your plant.

When you can have coatings like this — that last from 25% to 50% longer; that make plants and equipment look better, longer — don't you think you should find out more about them soon?

Send for your copy of "Why Silicone-Based Paints Mean Less Maintenance". Write Dow Corning Corporation, Department 0722, Midland, Mich.

first in silicones

Dow Corning

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 53.

Maintenance of Asphalt Pavements

573 This is the title of *Information Series* No. 117, authored by W. L. Hinderman and published by the ASPHALT INSTITUTE, ASPHALT INSTITUTE BLDG., COLLEGE PARK, MD. It discusses patching asphalt surfaces, surface repair for wear, distortion, spot strengthening, methods and materials for sealing cracks, rehabilitation and maintenance equipment.

Designed for Big Work Output

574 Here's a machine that's designed to meet the needs of fast-paced construction schedules. It's well-adapted for a wide variety of work, has the power to deliver at blade and drawbar, bucket and powershaft. Write JOHN DEERE, 3300 RIVER DRIVE, MOLINE, ILL. Ask about the "4010."

Pipe Facts

575 JOHNS-MANSVILLE, BOX 362, AC-10, NEW YORK 16, N. Y., is making available a Contractor's Kit of cost-saving facts with Transite Pipe, used successfully on water and sewer main jobs, on subsurface drainage jobs and on power or phone cableways. Write today for your copy!

New Submersible Pumps

576 Here's a submersible that pumps more, pumps dependably. Its automatic; it's electric. It handles silty water and solids up to one-inch diameter and pumps 1000 gpm at 148-foot head. THE GORMAN-RUPP CO., 305 BOWMAN ST., MANSFIELD, OHIO, will supply details on this 8-inch pump.

Introduces Hydraulic Winch

577 The Model 10 has full hydraulic power and is capable of line pull of more than 17,000 pounds. It fits all tractors and is available with either larger cylinders for more power or smaller cylinders for more speed. For literature, write WINDSOR PIPPIN CORP., WINDSOR, VT.

Package Alum Plants

578 A 6-page gatefold folder describes a new process that would enable municipalities to make its own liquid or solid alum more economically, achieving savings in process time and costs. Available from CHEMICAL CONSTRUCTION CORP., 320 PARK AVE., NEW YORK 22, N. Y.

Tapered Steel Lighting Tubes

579 Engineered for permanence, strength and safety, Tulito tapered steel lighting tubes accommodate 2 to 40 lights, are ideally suited for area and floodlighting applications—playgrounds, athletic fields, shopping centers. Write MEYER MACHINE, INC., P. O. BOX 131, RED WING, MINN.

Dual Head Hyprochlorinator

580 Electrically-operated Series A-748 dual head hypochlorinator is equipped to continuously handle most of the chemical solutions commonly used in water treatment. *Catalog* File No. 8-.140 gives features, technical data. Write WALLACE & TIERNAN INC., 25 MAIN ST., BELLEVILLE 9, N. J.

Birds a Problem?

581 RID-A-BIRD, INC., P. O. BOX 22, MUSCATINE, IA., has devised a safe, simple, sure way to rid downtown areas of pest birds and the accompanying unsightly deposits on buildings and annoying bombardments. By writing to the company, you will receive complete information.

They're Anti Rust

582 Paints containing M50 pigment inhibit rust, restrict rust creepage are durable and weather resistant. Antirust action goes from primer through finish coat. For details, write NATIONAL LEAD CO., 111 BROADWAY, NEW YORK 6, N. Y.

Pump Catalog

583 New 1008-page *Pic-A-Pump Catalog* now available from ALLIS-CHALMERS, MILWAUKEE 1, WIS., covers the company's complete expanded pump line. Engineering data, parts listings, prices, 64-page reference section included. Requests should be made on business or professional letterhead.

Packaged Sewage Lift Stations

584 These factory-assembled, completely guaranteed pumping stations are being offered by WEIL PUMP CO., 1518A N. FREMONT ST., CHICAGO 22, ILL. Pumps are nonclog; operation automatic; installation takes one day. *Bulletin* No. LS 2200 gives full facts.

pH Recording and Control

585 A new, low-cost system for measuring pH eliminates the intermediate amplifier, and along with it wasted panel space, drift, and the need for daily standardization. Data sheet provides details: write THE FOXBORO CO., 9510 NEPONSET AVE., FOXBORO, MASS.

Easy-To-Read Street Name Signs

586 Reflectorized, highly readable white-on-green street name signs are receiving 100% acceptance by taxpayers in the St. Louis area. For full facts on a popular program of street name signs with "Scotchlite" reflective sheeting, write DEPT. RBK-101, 3M CO., ST. PAUL 6, MINN.

New Traffic Delineator

587 RADIATOR SPECIALTY CO., CHARLOTTE, N. C., announces the Safe-T-Post, a traffic delineator designed to give traffic authorities a safe and simple way of guiding traffic. Made of Poly-Vinyl, with metal base, it snaps back to upright position when bent or hit.

Material Spreader Specification Sheets

588 By writing to FOX RIVER TRACTOR CO., ROAD MACHINERY DIV., 1020 N. RANKIN ST., APPLETON, WIS., you can obtain case history reports, catalog literature, and no-obligation demonstration of Fox mountable material spreaders for winter-time ice control.

Odor Control

589 This 20-page booklet tells how Ozene curbs objectionable odors and their causes—sulfide-forming bacteria and mold micro-organisms—such as those that often cause difficulty in sewage disposal plants, garbage dumps, incinerators, septic tanks, etc. Request copy OC-1; write SOLVAY PROCESS DIV., ALLIED CHEMICAL CORP., 61 BROADWAY, NEW YORK 6, N. Y.

New Products for Area Lighting

590 GENERAL ELECTRIC CO., SCHENECTADY 5, N. Y., has introduced a half-dozen new products for area lighting. Area Lighting Designer's and Buyers' Guide comprehensively presents all luminaires, controls, brackets and hardware accessories associated with area lighting. Application data, illustrations, installation recommendations, floodlights, proper foot-candle levels, etc. included.

3-Wheel Vehicle for Off-The-Road Service

591 Introduced by CUSHMAN MOTORS, LINCOLN, NEB., the Haulster is especially suitable for moving men and materials in plants, parks, golf courses, and other areas where the vehicle isn't required to travel city streets or highways. It develops 470 pounds drawbar pull in low gear.

Tubular-Shaped Refuse Body

592 In this hydraulically-operated collection unit, refuse is compacted under 85,000 pounds of pressure, expelled through rear split door. For other salient features, request 4-page illustrated brochure; write SEAL-PRESS, INC., ROUTE 10, BOX 208, SAN ANTONIO, TEXAS.

60-HP Valve-In-Head Engine

593 *Bulletin* S-282 describes the valve-in-head air-cooled V-460D, most powerful in the Wisconsin line, illustrates features that improve engine efficiency and performance, includes detailed specifications, optional equipment, etc. Write DEPT. NR, WISCONSIN MOTOR CORP., MILWAUKEE 46, WIS.

Two New Payloaders

594 THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL., announces the availability of complete data on its new 2½-cubic yard Payloader—the H-70C—and its all-new 1¾-cubic yard Payloader, Model H-60.

Mounted Waste Receptacle

595 These new indoor-outdoor units invite use. They can be hung on pole, wall, door and are easy to install. Outdoor units have perforated bottom; indoor, solid. For literature on the LITTERETTE, write D. J. ALEXANDER CORP., 294 E. VENANGO ST., PHILADELPHIA 34, PA.

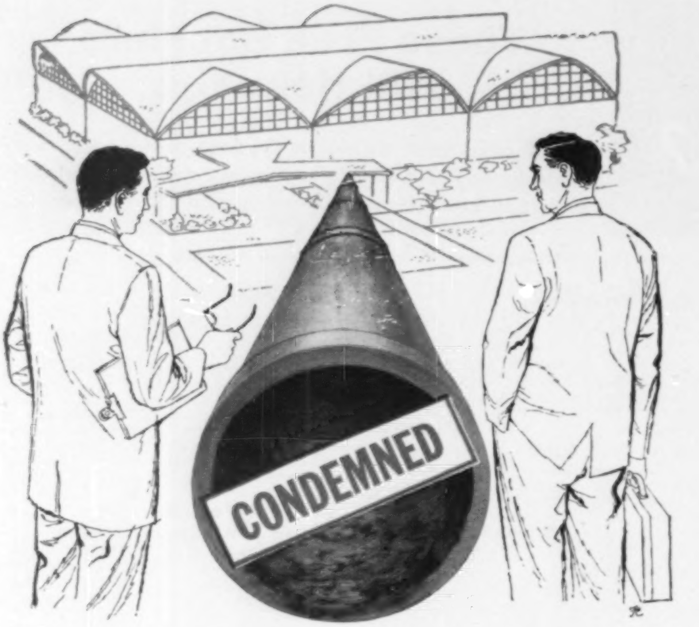
Stop and Go Diesels

596 This 16-page brochure reports on nine models—70 to 160 hp—of diesels for trucks subjected to long hours of idling, lots of stops and starts; explains how they reduce fuel costs, reduce maintenance costs, etc. Write CUMMINS ENGINE CO., INC., COLUMBUS, IND.

Bristles for Gutter Brooms

597 KAISER-REISMANN CORP., 325 SPRING ST., NEW YORK 13, N. Y., announces availability of information on Reevon polypropylene bristles for gutter brooms. These fibres can be obtained when ordering original equipment or as replacement bristles, and are said to give longer wear per dollar than any other bristles—natural or synthetic.

(See page 46 for more Bulletins)



LET US SOLVE YOUR INDUSTRIAL WASTE PROBLEM

Today's modern industries and processes often create industrial waste problems that can actually stall profit-making applications of new discoveries.

Naturally enough, communities feel that public health comes first, and some industrial wastes and acids may eat up sewer lines fast.

At Crystal Lake, Illinois, the Clay Pipe industry has built a modern new testing laboratory. Experimentation is constantly going on to test pipe and jointing materials to see which is actually the best under all conditions for sanitary and industrial wastes.

Tests show that Vitrified Clay Pipe with its new resilient self-sealing joints is impervious to the corrosive action of sanitary sewerage and industrial wastes and acids which normally flow through sewer lines.

But yours may be a special problem. Let us help you with it. Write, outlining the problem to be tested, to:

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1028 Connecticut Ave., Washington, D. C.

Please send me full details on the new factory-made compression joints on Clay Pipe.

(name) ____________________
(company) ____________________
(street address) ____________________
(city and state) ____________________
B-8C23 AC

COMPRESSION SEALED, VITRIFIED
CLAY IMPERVIOUS PIPE
THE STANDARD in SANITARY SEWERS

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1028 *Connecticut Avenue* *Washington* 6, *D. C.*

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 53.

Turns Tractor Shovel Into Double-Duty Unit

598 WARE MACHINE WORKS, INC., WARE, MASS., has issued a leaflet on its Series 400 and 450 Hydro-Trencher for the Nelson tractor shovel. Working specifications, capacities, buckets, construction, dimensions, hydraulic system as well as new features are included.

Engines for Fire Apparatus

599 When looking for an engine to power fire apparatus, you want to select one that delivers high-output performance, has stamina, and is dependable and powerful. MACK FIRE APPARATUS, ALLENTOWN, PA., offers three Thermodyne gasoline or diesel engines to meet fire apparatus needs.

1962 Ford Trucks

600 Whether you're interested in heavy-duty's, economy-priced, pick-up or van-type trucks, you'll find just the right one in the 1962 Ford truck line, which includes 600 models. For full-complement literature, write FORD MOTOR CO., P. O. BOX 658, DEARBORN, MICH.

Year-Round Material Handler

601 . . . swings its load 180°, handles a host of different jobs, has ten quickly-interchangeable attachments. Full-fact literature on the versatile, all-purpose Speed Swing is available from PETTIBONE MULLIKEN CORP., 4700 W. DIVISION ST., CHICAGO 51, ILL.

Emergency Lighting Handbook

602 An illustrated handbook on Exide's line of automatic battery-powered Lightguard emergency lighting equipment offers complete technical descriptions of the batteries, chargers, relays, connections, lamps, instrumentations lights and switches. For copy, request *Form* 6527 from EXIDE INDUSTRIAL MARKETING DIV., THE ELECTRIC STORAGE BATTERY CO., RISING SUN AND ADAMS AVE., PHILADELPHIA 20, PA.

Rock Salt

603 Additional rock salt storage depots have been set up throughout the snow and ice belt by DIAMOND CRYSTAL SALT CO., ST. CLAIR, MICH., to help cities get their necessary supply faster and more economically. To learn of locations, write to the company.

New Ladder-Type Trencher

604 Model 255 Trenchliner can cut an 18 to 48-inch trench up to 15 feet deep. It has just been introduced by the PARSONS COMPANY, NEWTON, IOWA, and despite big digging capacity has low silhouette. Low center of gravity gives it better capability in close-quarter trenching.

Fire-Fighting Equipment

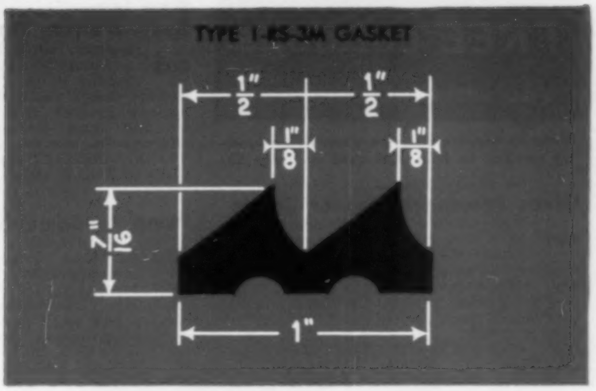
605 New brass fire nozzles, valves and allied hardware—more than 500 items—make up the complement of firefighting products available from EXCELSIOR BRASS MFG. CO., 623 MADISON ST., EVANSTON, ILL. Full details available from company.

Snow Plow Attachments

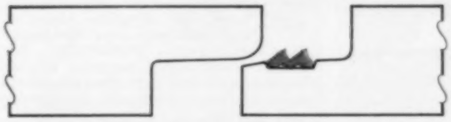
606 A V-type snow plow to be mounted simply but securely on the front of a Gradall for fast and easy plowing of a traffic path through the snow and a one-way snow blade to push the snow to one side of the roadway are announced in literature offered by THE WARNER & SWASEY CO., CLEVELAND, OHIO.

(See page 48 for more Bulletins)

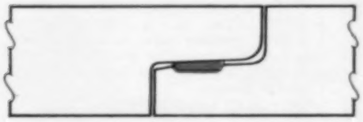
TWO-WEDGE
PRESS-SEAL
GASKET...*makes* TWO-WAY SEAL
in recessed concrete sewer pipe



BELL AND SPIGOT PIPE

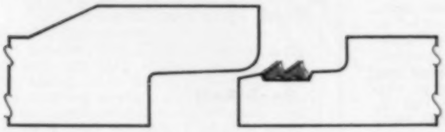


Gasket properly positioned in recess

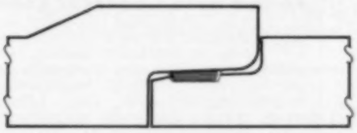


Gasket depressed to fill annular space

TONGUE AND GROOVE PIPE



Gasket properly positioned in recess



Gasket depressed to fill annular space

Two wedge shaped sections, joined into one integral base, provide a double seal effect with the Press-Seal Type 1-RS-3M molded gasket. Designed to be used in conjunction with a recess in the tongue or spigot end of concrete pipe.

When assembled, resilient rubber depresses to fill annular recess space. Each gasket is cut to a precalculated and determined volume to assure a watertight joint. Confinement of gasket by sides of annular recess makes a positive seal against exfiltration or infiltration. Will withstand head pressures up to 50 feet.

This gasket design and the resilience of the rubber permit angular deflection and shear loads to be imposed without affecting the sealing action.

Press-Seal Type 1-RS-3M molded gaskets available in Natural and Styrene-Butadiene rubber for common sewage, Neoprene for animal fat and acid content, Buna-N for oil content.

Can be applied either at pipe manufacturer's plant or job site.

Write for our manual No. 4—Better seals for concrete pipe.

The lowest cost material item in any Pipe-line Project is a PRESS-SEAL Gasket

MANUFACTURED EXCLUSIVELY BY

PRESS-SEAL GASKET CORP.

TRADE MARK

OFFICE AND PLANT: P. O. BOX 482, R.R. 6, COVINGTON RD.
FORT WAYNE, INDIANA • Phone Kenmore 5213

PRESS-SEAL GASKET OF CALIFORNIA—P.O. BOX 3054, SANTA BARBARA, CALIFORNIA
PRESS-SEAL GASKET OF CANADA—KITCHENER, ONTARIO

FREE catalogs
You will find of interest

Write to address given or circle corresponding number on free post card on page 53.

Gives Permanent Sewer Joints

607 Super Sewer Seal (Product 5312) is a hot poured sewer joint compound that resists corrosion, gives positive adhesion, doesn't deteriorate at high temperatures, doesn't slump in hot weather, doesn't chip in cold. For information sheet, write ALLIED MATERIALS CORP., 5101 N. PENNSYLVANIA, P. O. BOX 7278-39TH ST. STATION, OKLAHOMA CITY, OKLA.

New Ice-, Snow-Melting Compound

608 *Bulletin* 8317 describes Melts-It 99 as being 99% chemically active, containing neither additives nor fillers, sodium chloride nor rock salt. It's said to possess greater thawing capacity, melt ice and snow faster and be especially effective in low temperature. Write NATIONAL ASPHALT CORP., P. O. BOX 2275, CLEVELAND 9, OHIO.

Pump Fundamentals

609 This non-technical 16-page booklet gives an elementary outline of the characteristics, operation and selection of reciprocating, rotary and centrifugal pumps. Definitions, basic formulae, examples and other data frequently used in pump application are included. Write GOULD PUMPS, INC., 226 BLACK BROOK RD., SENECA FALLS, N. Y.

Protects Vital Installations Against Power Failure

610 Engineering catalogs on Redi-Torq automatic combination gear drives explain how these units provide round-the-clock protection against power failure in water, sewage and fire installations. Write JOHNSON GEAR & MFG. CO., LTD. 8TH AND PARKER STS., BERKELEY 10, CALIF.

Traffic Line Marking Equipment

611 *Catalog* W-58 will tell you about WALD INDUSTRIES, INC., HUNTINGDON, PA., and its complete, carefully-engineered line of striping equipment for use by municipalities, counties, states and other governmental agencies.

Pre-Engineered Recreational Buildings

612 Subject of a new, 8-page, illustrated brochure is the design and construction of new recreational buildings housing pools, skating rinks, community centers, and club facilities. Available from STRAN-STEEL CORP., a division of NATIONAL STEEL CORP., DETROIT 29, MICH.

Water Well Services

613 This 8-page, illustrated bulletin presents the complete range of water well services and methods of the HALLIBURTON COMPANY, DUNCAN, OKLA. Cementing, pressure acidizing, hydro-sonic water well redevelopment process, tools and equipment are discussed.

Street Name Signs

614 A new, fully-illustrated street name sign catalog has been issued by LYLE SIGNS, INC., 2722 UNIVERSITY AVE. S. E., MINNEAPOLIS 14, MINN. Among new items included, is a low-cost, one-piece aluminum bracket assembly, matched to Lyle's standard style name plates.

Potable Water Filtration

615 *Bulletin* PW-801 is a case history report of the installation filtering potable water for the City of Hudson, N. Y. (pop. 12,000). Installation and operating costs, performance data, photographs and system flow diagram included. Write R. P. ADAMS COMPANY, INC., EAST PARK DRIVE, BUFFALO 17, N. Y.

Pool Painting Guide

616 This comprehensive 17-page booklet explains why pools should be painted, discusses painting and repainting of concrete and steel pools, includes pool painting tips, gives general pool surface maintenance information, etc. Write THE KELLEY PAINT CO., 1445 S 15TH ST., LOUISVILLE, KY.

Forced Feed Conveyor Loader

617 New continuous elevating loader is designed for such material handling jobs as stockpile loading, windrow pickup, scarifying and stripping, and for pit and bank loading. Manufactured by HARRINGTON MFG. CO., LEWISTON, N. C., it's announced by MASSEY-FERGUSON, DETROIT 32, MICH., for its industrial line of equipment.

Cuts Snow-Removal Time

618 FRINK SNO-PLOWS, INC., CLAYTON, N. Y., has developed a Roll-Over snowplow for clearing airports and thruways economically and rapidly. The plow rotates from left to right position in 15 seconds, eliminating deadheading, cutting plowing time in half. Address inquiries to DEPT. AC-1061.

Highway Traffic Lane Broom

619 Newly-designed 40-inch angle broom is now available to municipal and county highway departments for highway and street sweeping prior to traffic lane painting. It sweeps a 36-inch swath, angles 30° to left or right, and is designed to fit the front of most any highway truck. Write MARS INDUSTRIES, INC., 5209 W. BROADWAY, MINNEAPOLIS 22, MINN.

(See page 52 for more Bulletins)

NORTH CANTON'S NEW SEWERODER HAS RESERVE CAPACITY FOR FUTURE SEWER ANNEXATIONS

Ohio's new city gears up for growth

A. J. Haun, Water & Sewer Supt., watches SeweRodeR in action as John Fleischman, machine operator, handles simplified controls. Board of Public Affairs, which concurred in selection of the SeweRodeR, consists of Carl O. Sponseller, Pres.; George W. Post, L. Earl Waltenbaugh, Members; and Lester L. Broucher, Clerk.

Rapid growth during the past ten years resulted in North Canton, Ohio becoming a City in 1961. Even faster growth is anticipated through annexations, and the City officials have wisely taken this into account by long range planning.

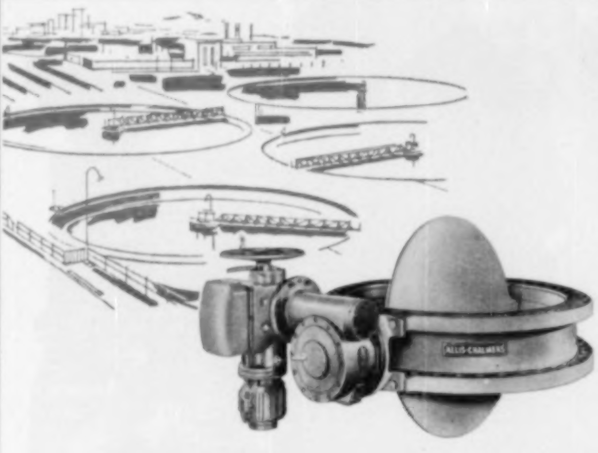
A major problem created by the rapid expansion is the ability to provide adequate sewer cleaning service for today's needs, plus reserve capacity for the future. After careful investigation, Water & Sewer Supt. A. J. Haun found that by purchasing and truck-mounting a SEWERODER, a single rodding crew could easily maintain the entire system on a preventive maintenance basis. He says, "we find the SEWERODER to be the easiest machine to set up and operate that we have ever had."

The SEWERODER's superior performance is made possible by many unique and exclusive features, such as positive non-slip rod drive, automatic safety clutch, instantly reversible push-pull power. All rods are self-contained in the machine and operating controls are conveniently located. Set-ups are made from street surface by merely lowering the hose guide into the manhole by means of a rope.

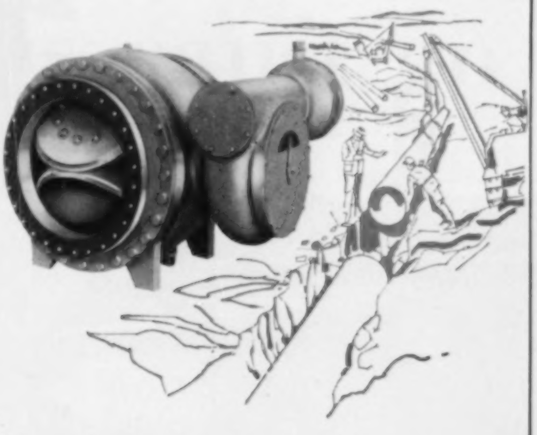
FLEXIBLE Inc.

415 South Zangs Blvd., Dallas, Texas
3786 Durango Ave., Los Angeles 34, Calif. • 1005 Spencerville Road, Lima, Ohio

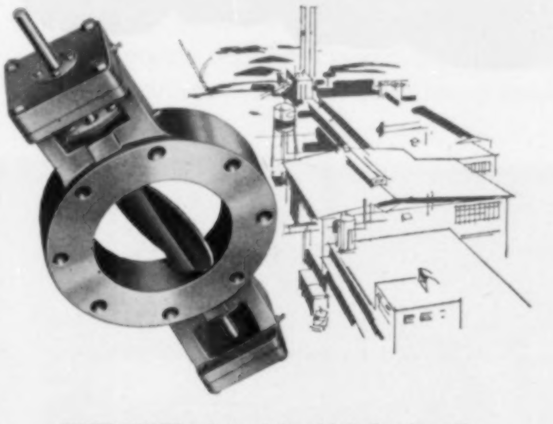
ALLIS-CHALMERS



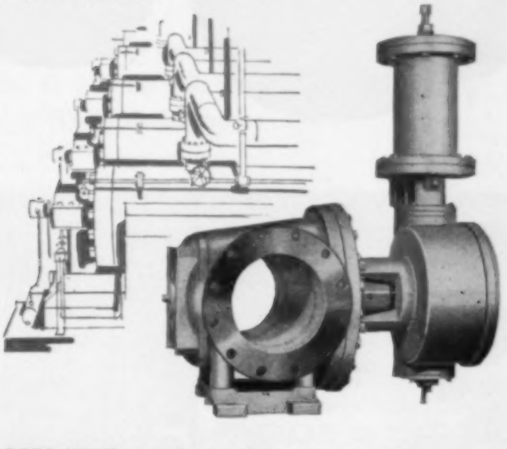
BUTTERFLY VALVES — For liquids or gases — uniform control in all positions, fast positive regulation and closure, minimum pressure drop. Compact and lightweight. Sizes from 1 in.



BALL VALVES — Easy manual shutoff under adverse conditions, and up to 150 psi. Slight wedging action gives unusually drop-tight closure. Sizes: 12 to 48 in.



WAFER VALVES — A new design of butterfly valves with space-saving flexibility, suited to most any type of operation. Sizes from 3 to 36 in., including high-pressure types.



ROTOVALVE — A cone valve suited to virtually any type of operation or location. Offers the least pressure loss, greatest initial shutoff, controlled closing time, positive seating.

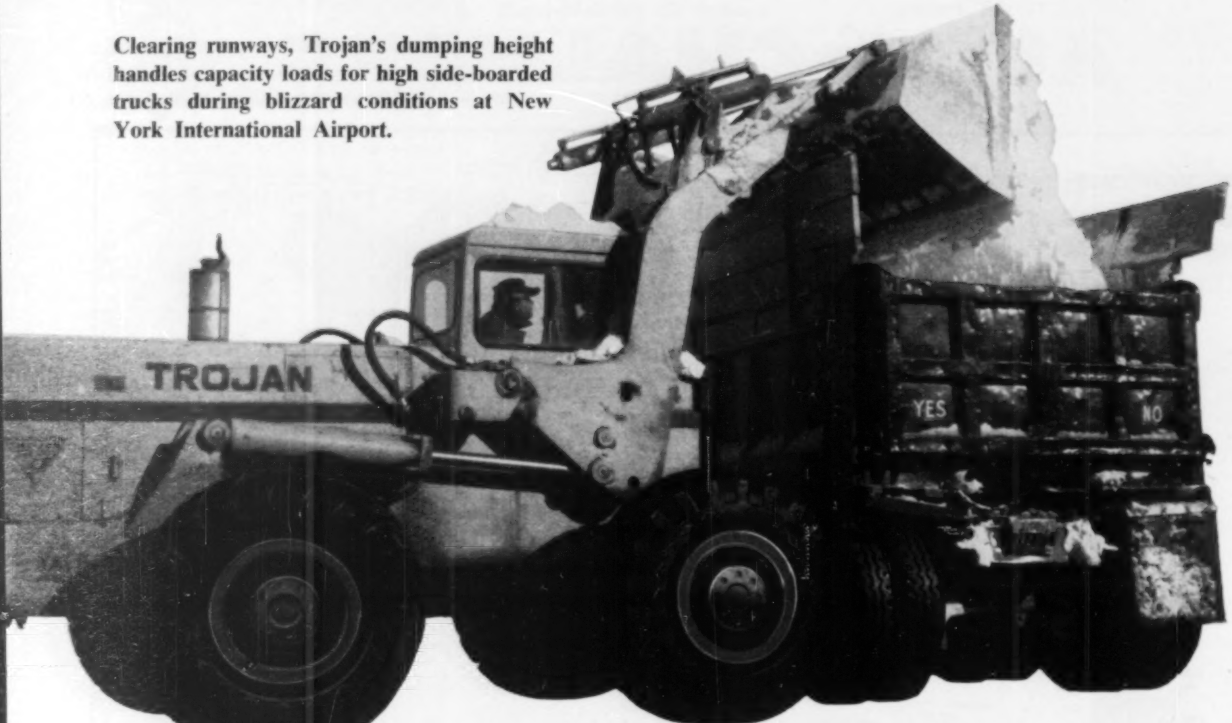
Now: for power plants, sewage and water works —

a full line of rotary valves

Serving you even better through a broader line—Allis-Chalmers offers the finest in butterfly, ball and cone valves for industrial applications, power plants, sewage and water works. Also available are complete valving systems in standardized "packages" that provide *remote, telemetered control of valve operation.* These additions further round out Allis-Chalmers line that includes Angle, Needle, Relief valves, sleeve-type valves and accumulator systems. *For details, contact your Allis-Chalmers valve representative or write* **Allis-Chalmers,** ***Milwaukee 1, Wisconsin.***

Rotovalve is an Allis-Chalmers trademark.

A-1381



Clearing runways, Trojan's dumping height handles capacity loads for high side-boarded trucks during blizzard conditions at New York International Airport.

Trojan's high-capacity snow bucket quickly stockpiles snow to free the parking area of this New England community.

A Trojan model 204 with front-mounted snow-blower loads windrowed snow into trucks for disposal outside this Wisconsin town.

The Village of Hamburg, N. Y. coordinates its D.P.W. tools by using a Model 164 Trojan to widen thoroughfares.

TROJAN ATTACHMENTS DO MORE JOBS—BETTER

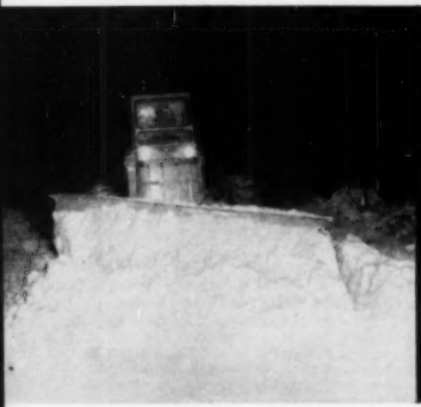
Trojan's quick-change attachments make it possible to adapt your tractor shovel to handle the special jobs, faster. Four pins on those attachments mounted in place of the bucket allow fast changeover . . . and pay-off many times over in added production. Trojan's snow bucket, one-way or V-type plows, and snow blower are all ideal for winter snow removal. The crane hook or back fill blade economically handle municipal water and sewer line projects without the addition of specialized equipment. With the deep-digging backhoe attachment, even greater work assignments can be handled by Trojan. Ask for the details on all the versatile Trojan attachments designed to add year-'round versatility to your public works program.

TROJAN moves snow ...when others can't go

When snow spreads its paralyzing blanket in cities, towns, on highways and airports... when arteries of transportation are strangling... and the efficient performance of municipal service is jeopardized — a Trojan tractor shovel can be the most valuable piece of equipment in your garage.

With a Trojan tractor shovel, an unexpected storm need not be an emergency. Trojan's four wheel drive and unexcelled traction move in on the heaviest drifts with knifelike ease... even in snows that stop conventional truck-mounted plows. Your Trojan can load chlorides and abrasives at stockpiles... quickly handle truckloading with its special high-capacity snow bucket. A Trojan operator sits in comfort in an all-weather cab — the fatigue that comes from long hours of snow fighting is virtually eliminated.

Clear snow quickly and economically with a Trojan tractor shovel. Seven models with lift capacities from 7,000 lbs. to 24,000 lbs. provide the answer to your snow removal problem. Contact your Trojan distributor now.



Trojan model 114 with one-way plow clears heavy drifts while plowing in a rural area of northern New Jersey.

Near Chicago, a Trojan model 134 efficiently clears street intersections to ease traffic flow.

MODEL 114
Lifting Capacity 7,000 lbs.
¾ to 2 cu. yd. buckets.

MODEL 134
Lifting Capacity 8,000 lbs.
1 to 2½ cu. yd. buckets.

MODEL 164
Lifting Capacity 10,000 lbs.
1⅓ to 2¾ cu. yd. buckets.

MODEL 204
Lifting Capacity 12,000 lbs.
1⅔ to 3 cu. yd. buckets.

MODEL 254
Lifting Capacity 15,000 lbs.
2 to 4 cu. yd. buckets.

MODEL 304
Lifting Capacity 18,000 lbs.
2 to 5 cu. yd. buckets.

MODEL 404
Lifting Capacity 24,000 lbs.
3 to 6 cu. yd. buckets.

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

THE **YALE & TOWNE** MANUFACTURING COMPANY
TROJAN DIVISION • BATAVIA, NEW YORK

AD NO 44-10

DANLINE
SWEEPS
THE NATION
A Cleaner City Today
MINNEAPOLIS
MINNESOTA

NEWARK

The Mayo Foundation, flour mills, dairy products plants, agricultural equipment manufacturers — and 1961 location for the APWA show — Minneapolis serves the nation in many ways. It cares for its streets in only one — with Danline wire sweeping brushes. Mr. Ray J. Helwig, Supt. Equipment Div., says, "When it comes to real heavy sweeping the Danline is a superior broom. We use them on our sweepers because they are sturdy and durable, giving us a definite advantage in heavy spring clean-up and chip removal. There is no question but that the Danline broom is efficient and a money saver on heavy sweeping." Danline is the answer to your sweeping problem too. We invite your inquiry.

59-66

Leadership Proved Through Performance!

NEWARK BRUSH COMPANY

260 MICHIGAN AVE., KENILWORTH, N. J.

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 53.

Highway, Traffic Safety Engineer

620 PHOTO/FILE SURVEYS INC., 210 E. COURTLAND ST., PHILADELPHIA 20, PA., offers a newly-developed, proved system for photo-recording of highways, which delivers complete photographic record of the highway and its appurtenances as seen from the driver's point of view. Bulletin available.

Cleans Electric Motors

621 If water rinse is undesirable or impractical this non-conductive cleaning agent can be used to thoroughly and quickly clean electric motors and equipment. Ask SANFAX CORP., P. O. BOX 604, ATLANTA, GA., about details and applications of DG-66.

Turf Sprinklers

622 Roto Pop-Up concealed turf sprinklers are for use on automatic or manual controlled underground systems on parks, golf courses, athletic fields, and other large turf areas. *Turf Catalog* No. 61-R gives models, specifications. Write RAINY SPRINKLER SALES, 609 W. LAKE ST., PEORIA, ILL.

Rugged Road Equipment

623 This comprehensive line includes utility rollers, snow plows, spreaders, road graders, mobile weighing stations, a vacuum leaf-loader. For descriptive literature, write THE GLEDHILL ROAD MACHINERY CO., GALION, OHIO.

Aluminum Chain-Link Fence

624 ANCHOR FENCE, DEPT. AC9, 6661 EASTERN AVE., BALTIMORE 24, MD., announces availability of a catalog on its new, all-aluminum, maintenance-free chain-link fence for highways, parks, playgrounds, plants, made from Reynolds aluminum.

Want Purer Water?

625 Providing help to municipalities with water purification problems—coagulation, softening, removal of iron and manganese—is a specialty of TENNESSEE CORP., 612-629 GRANT BLDG., ATLANTA 3, GA., which will also supply application information on Ferric-Floc, copper sulfate and sodium silicofluoride.

Lightning Arrester Bulletin for Electric District Systems

626 Updated *Bulletin* LA2 covers application features, ordering and dimensional information on three types of lightning arresters as well as transformer, capacitor bank and underground distribution protection advice. It is available from LINE MATERIAL INDUSTRIES, McGRAW-EDISON CO., MILWAUKEE 1, WIS.

Electric Power Anywhere, Anytime

627 . . . is the title of a new brochure which describes an extensive line of air-cooled, electric power generators for continuous or intermittent use; powered by gasoline or diesel fuel and models that are stationary, mobile or for marine use. Write KOHLER CO., KOHLER, WIS., for your copy.

Tractor-Scraper

628 "Climb Aboard the New 619C" describes one of the newer machines in the Cat wheel-scraper line. Loading characteristics are detailed. Features described include torque divider drive, 18-yard bowl, 6 speeds requiring only 3 shifts. Request *Booklet* D-116; write CATERPILLAR TRACTOR CO., PEORIA, ILL.

(See page 64 for more Bulletins)

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

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FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

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Reader's Service Dept.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

Performance
Operator comfort
Wearability
Ease of maintenance
Reliability

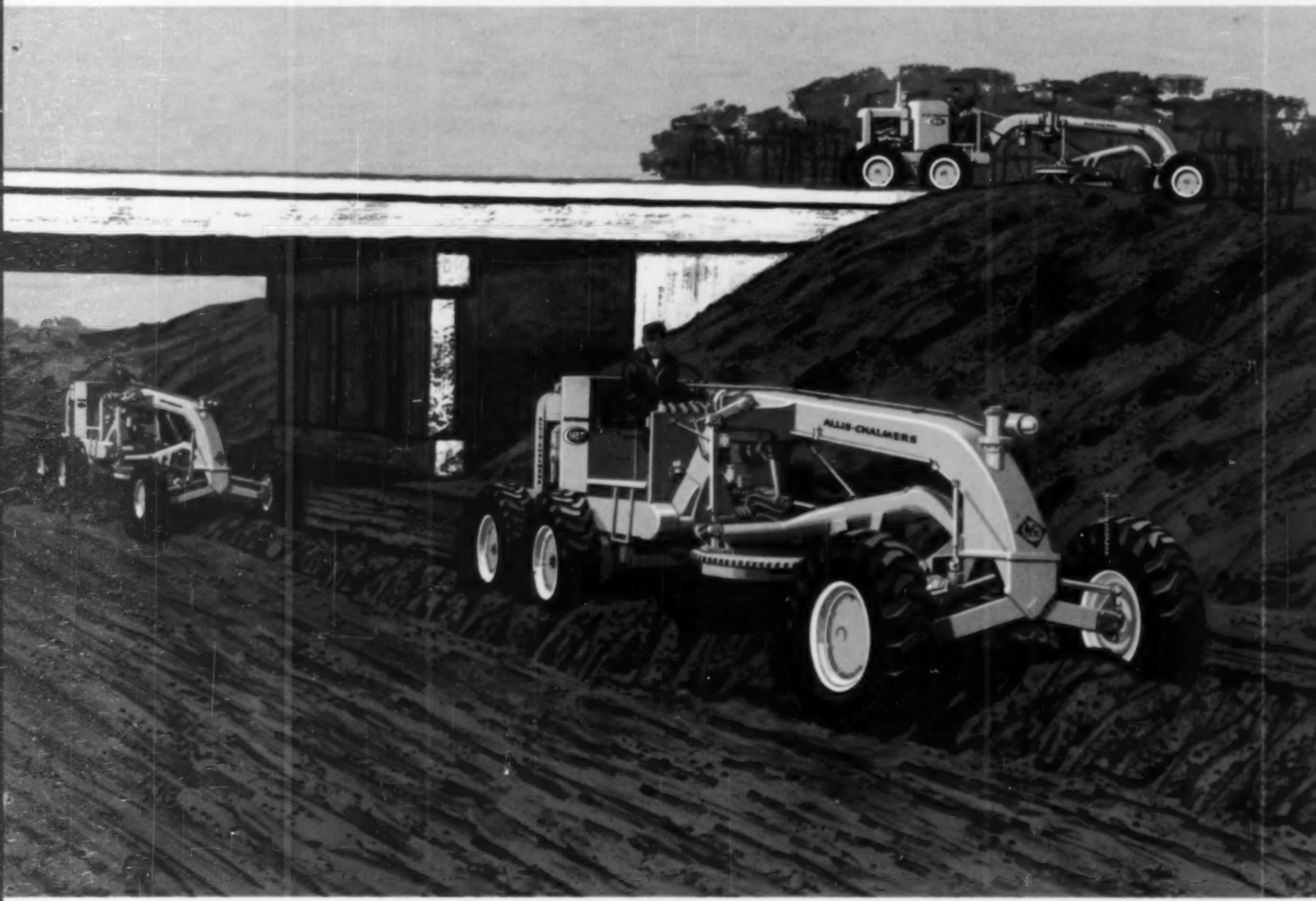
ALLIS-CHALMERS EXPANDED MOTOR GRADER L

...with BIG P-O-W-E-R extras for long-range on-the-job action

Pick the Allis-Chalmers grader that fits your job best. Compare the features that make any machine in this line so profitable to own. Then ask about the advantages that make them preferred among men who make their living behind a blade. You'll like what you see and hear.

If you're in the medium-size grader class, you'll find all the job-taming, down-to-earth things you want in a motor grader are in the 145T—newest addition to the Allis-Chalmers line. Now for the first time in years, you can again get exclusive Allis-Chalmers advantages on a unit in the 105-hp range.

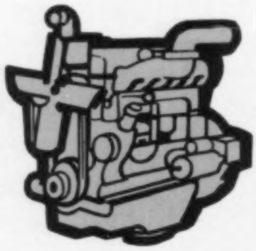
But the big news isn't just 145T. The entire line has taken a big step forward. It will pay you to get the complete story before you buy your next grader.



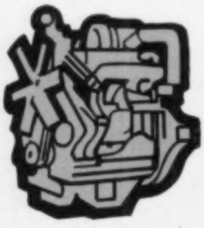
ALLIS-CHALMERS ENGINES KEEP PRODUCTION HIGH

Choose any grader . . . get an engine power-balanced to match its size. All feature dependable performance and rapid acceleration. High-torque characteristics give them excellent lugability to hang on to big loads.

127-HP
10000
engine
45



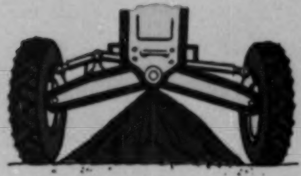
105-HP
7000
engine
(turbocharged)
145T



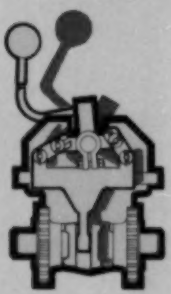
80-HP
344
engine
145

R LINE

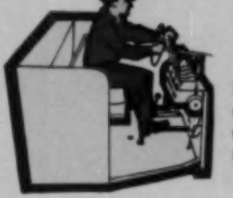
THESE BASIC ADVANTAGES MEAN BEST RESULTS . . . WITH BIG WINDROWS OR AT THE BLUE TOPS



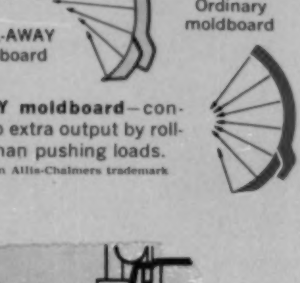
Extra-high axle and throat clearance—let you use full blade capacity.



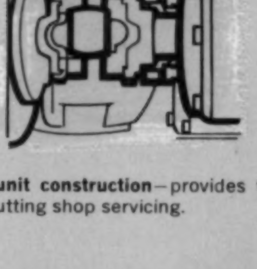
Toggle controls—provide precise, positive blade handling.



Flat, clean deck—excellent visibility keep operators comfortable and productive.

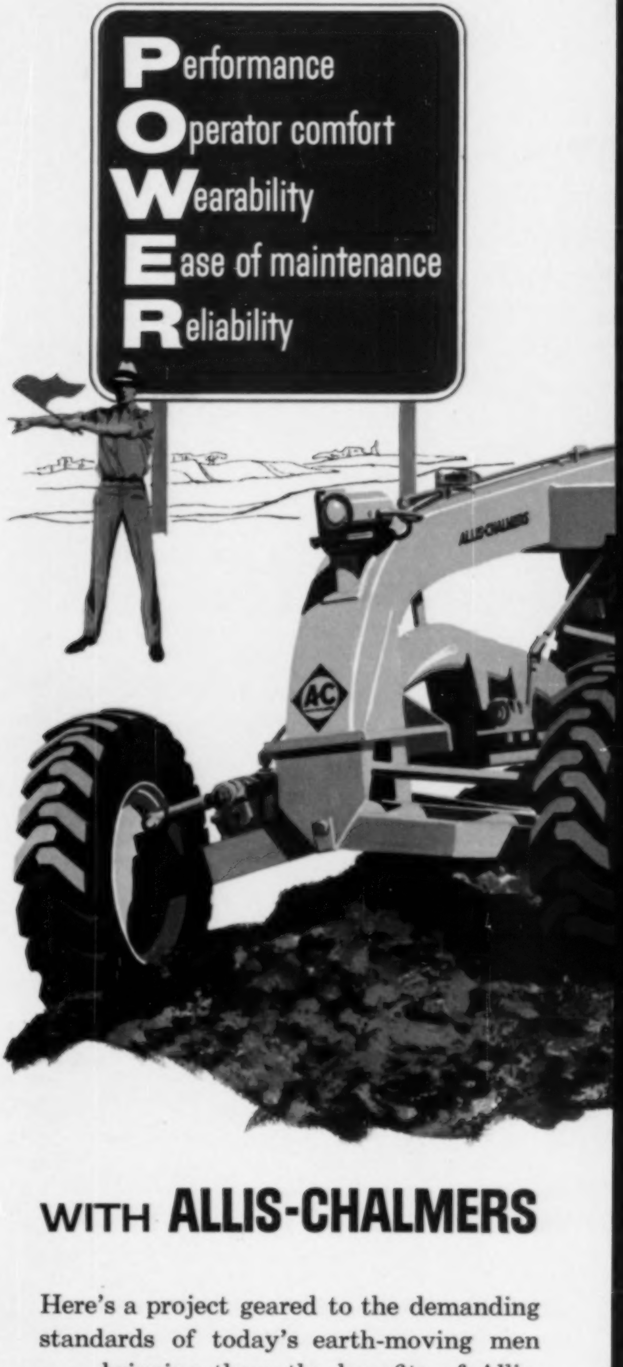


ROLL-AWAY moldboard—converts hp into extra output by rolling rather than pushing loads.
ROLL-AWAY is an Allis-Chalmers trademark



True unit construction—provides for fast, cost-cutting shop servicing.

Step up your MOTOR GRADER



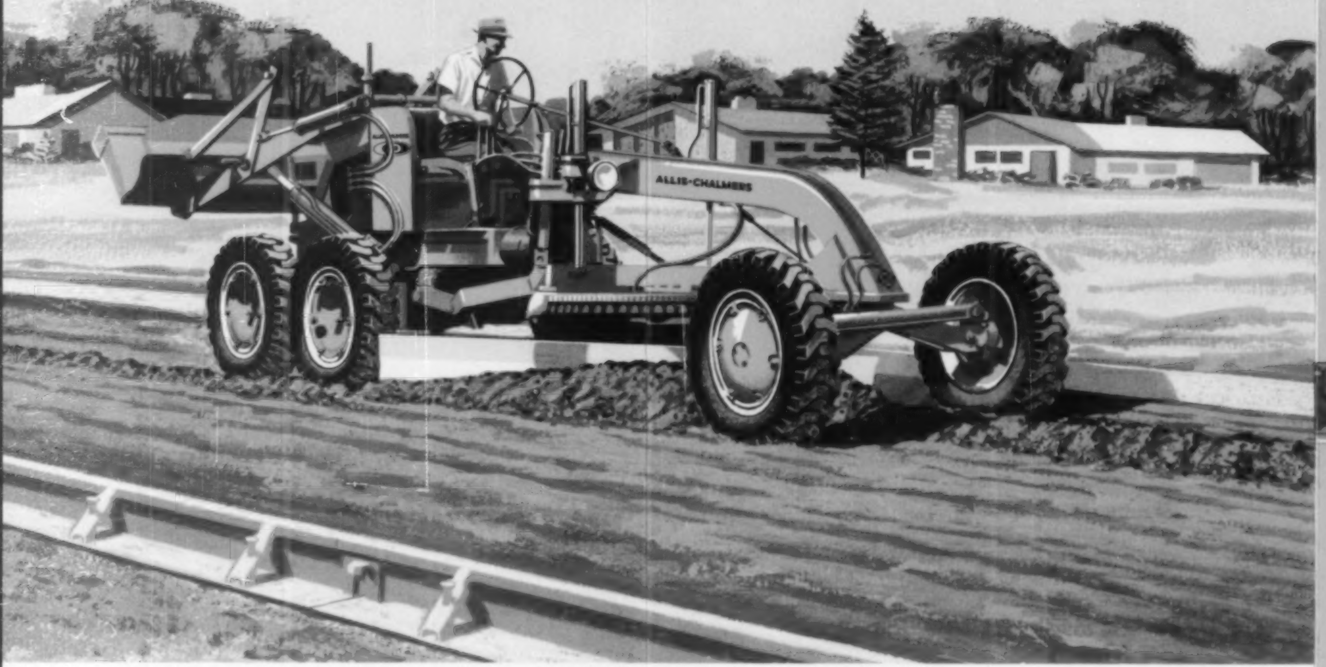
Performance
Operator comfort
Wearability
Ease of maintenance
Reliability

WITH ALLIS-CHALMERS

Here's a project geared to the demanding standards of today's earth-moving men . . . bringing them the benefits of Allis-Chalmers' massive research and development in the form of significant product improvements.

ALLIS-CHALMERS MODEL D

58-hp gasoline
58-hp diesel

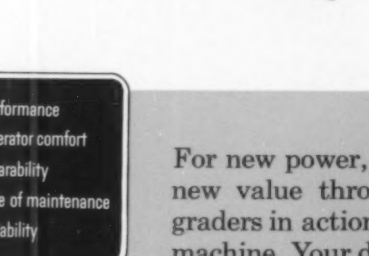


Equipped with a ¾-yd loader, the D does top grading job, handles its own cleanup.

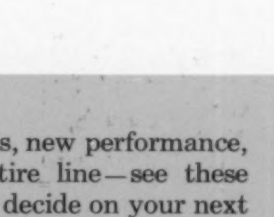
NOW! MORE VALUE ADDED TO THE BEST BUY IN MOTOR GRADERS

Pioneer in the low-cost grader field, the Model D takes on a new look and new value. A new square-section frame adds strength down the middle . . . tandem drive chains are stronger for long, tough service. The D is still out front as a handy grader for spot jobs on big contracts or as a solo machine for the smaller job. And a D's low price is still less than half the cost of a large grader.

ONLY THE D GIVES YOU SO MUCH ADDED USEFULNESS



Safe, one-pass shoulder maintenance—rebuild and maintain shoulders with one machine, one operator.



Full-scale scarifying—exclusive midship-mounting puts grader weight to effective use, keeps steering easy.

Performance
Operator comfort
Wearability
Ease of maintenance
Reliability

For new power, new features, new performance, new value through the entire line—see these graders in action before you decide on your next machine. Your dealer will arrange all the details.

Your Allis-Chalmers dealer is in business to . . .

PROTECT YOUR EQUIPMENT INVESTMENT WITH COMPLETE SERVICE

When you invest in Allis-Chalmers equipment, you get top performance in *every respect*. Your Allis-Chalmers dealer is fully equipped to serve you completely, conveniently. Make him your single source for:

- **Complete Parts Service**—original-quality parts on hand to meet your requirements quickly.
- **Ready-to-go Exchange Assemblies**—completely reconditioned assemblies on call. Your trade-in assembly is rebuilt without overtime charges . . . your machine is back to work quickly. Your cost? Only parts and regular-time labor needed to recondition your old assembly.
- **Specialized Service—Shop or Field**—top-notch mechanics are factory-trained to service your needs efficiently in a fully equipped shop or on your job.
- **Tailored Financing**—terms suited exactly to the financial requirements of all your machinery needs.

From one convenient source, then, you get the complete service package—job application information, new and used equipment, parts, service and financing. Who could be more interested in backing you up than your own dealer? That's his *business!*

Your every transaction in sales, parts, service and financing is fully backed and . . . .

Certified
FOR YOUR
PROTECTION
BY YOUR
ALLIS-CHALMERS
CONSTRUCTION MACHINERY DEALER

ALLIS-CHALMERS

POWER FOR A GROWING WORLD

LITHO IN USA D&J-61

GEIGY—creators of chemicals for modern agriculture

MUNICIPALITIES

GET AT THE ROOT OF YOUR WEED CONTROL PROBLEM

ATRAZINE SIMAZINE

HERBICIDES

Geigy industrial herbicides make possible full season weed control from one application.

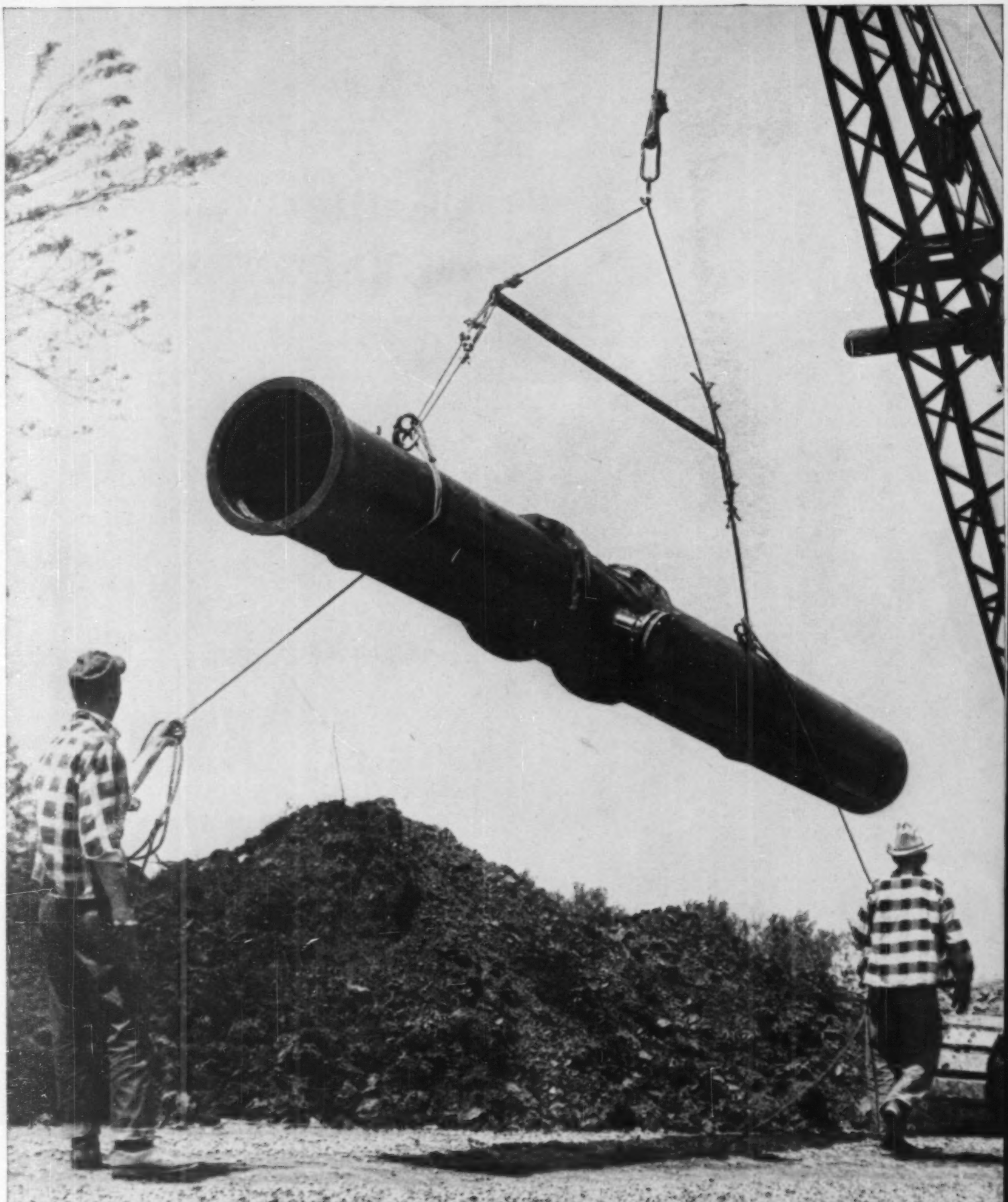
Atrazine or Simazine controls both broadleaf weeds and grasses—are non-irritating and low in toxicity to humans and animals. Both provide ease and economy in use.

Plan now to get at the root of your weed control problem. Your supplier has Geigy industrial herbicides in wettable powder or granular form. For free information call him today or write—Geigy Agricultural Chemicals, Division of Geigy Chemical Corporation, Saw Mill River Road, Ardsley, New York.

Geigy *ORIGINATORS OF DDT INSECTICIDES*

GEIGY AGRICULTURAL CHEMICALS

Division of Geigy Chemical Corporation • Saw Mill River Road, Ardsley, N.Y.



PIPE THAT SHOULDERS A HEAVY LOAD WITHOUT SHOWING ITS AGE

Recently installed in a town in Illinois, this cast iron pipe water supply system now serves a large industrial area.

Besides the internal pressure of supplying the heavy daily demand, there is a heavy load overhead, too. The industrial area is a packaging and distribution center. Large numbers of fully loaded rail cars and trucks come and go every day.

As far as the cast iron pipe is concerned, this is all in a day's work.

Cast iron pipe shoulders heavy loads—interior and exterior—year after year; performs efficiently for a century or more.

And it always delivers a full flow of water.

Advertising campaign from Cast Iron Pipe Research Association shoulders a heavy load, too!

For years the Cast Iron Pipe Research Association has attacked the water problem nationally; now, in addition, it is undertaking a new campaign to combat this crisis on a local level. Car cards, speeches, radio spots, newspaper ads, mailing pieces—everything will be included. If your town's problem is apathy or a growing water shortage, we may be able to help. For complete details, write to the Cast Iron Pipe Research Association today!

CAST IRON PIPE RESEARCH ASSOCIATION,
Thos. F. Wolfe, Managing Director,
3440 Prudential Plaza, Chicago 1, Illinois

CAST IRON PIPE
THE MARK OF THE 100-YEAR PIPE

When citizens of St. Louis County, Missouri, saw easy-to-read street name signs going up, they liked the idea. "Not one complaint," says County Highway Engineer John J. Leslie...

"THE TAXPAYERS FAVOR THIS STREET SIGN PROGRAM 100%!"

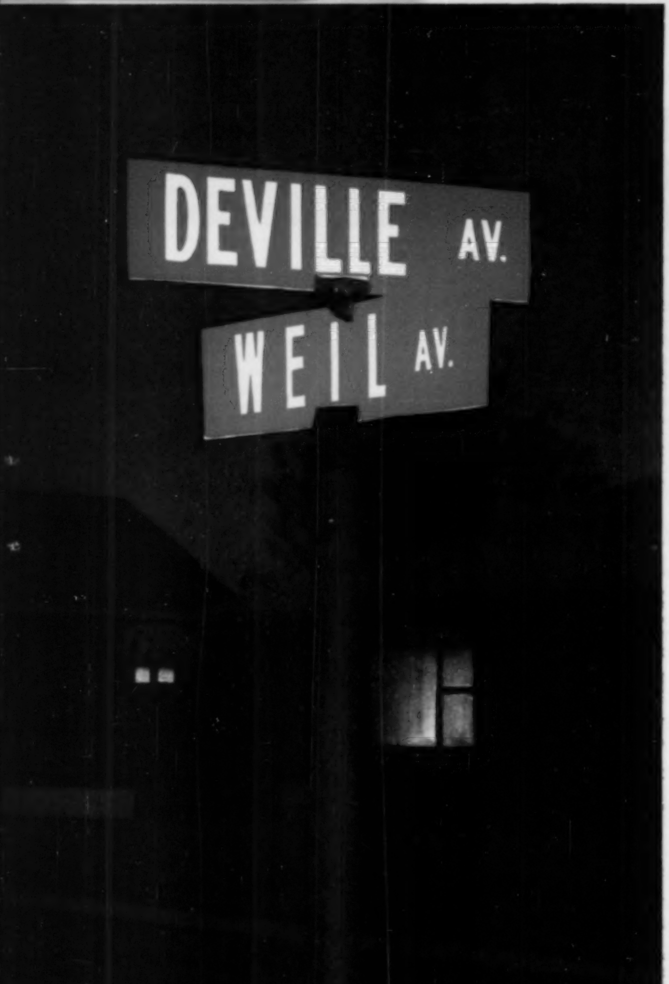
In late 1958 the St. Louis Metropolitan Traffic Engineers launched a drive for uniform, more readable street and road name signs throughout the area. A model sign of green and white reflective sheeting was proposed by St. Louis County and adopted.

As the new signs began to show up, there was favorable public comment. County Highway Engineer Leslie recalls that the people liked what they saw. The signs, reflectorized with "Scotchlite" Sheeting, were easier to read, especially at night. "As a result," Mr. Leslie says, "every penny spent has been enthusiastically endorsed by our taxpayers."

The City of St. Louis and the Missouri Highway Department also began to install uniform white-on-green signs at corners and intersections. In addition, over 20 local municipalities took part in the program. Here, too, public response was immediately enthusiastic. The St. Louis County municipalities with the latest look in street name signs include: *Bellefontaine Neighbors, Berkeley, Crestwood, Ferguson, Florissant, Hazelwood, Kirkwood, Lakeshire, Marlborough, Moline Acres, Olivette, Overland, Peerless Park, Richmond Heights, Rock Hill, Shrewsbury, Sunset Hills, Sycamore Hills, University City, Wilbur Park, Winchester.*

COUNTY TRAFFIC COMMISSIONER Daniel J. Hanson (left) and Shrewsbury Street Commissioner Edmond Flavin examine one of the new street assemblies made with "Scotchlite" Reflective Sheeting.

DEVILLE AV.
WEIL AV.



MAYOR WALTER L. MEYER (above) of Bellefontaine Neighbors, Missouri, says, "People like to see where their tax dollars are going. Our community is all for this street sign program."

MAYOR GEORGE HELMSING of Shrewsbury, Missouri, exclaims, "So satisfied are we with our new reflectorized street name signs, we now plan to reflectorize all our Stop signs and city entrance signs."

RIO ST
ST. LOUIS COUNTY LINE
LACKLINK RD
PORTSMOUTH

MAKING OR MAINTAINING SIGNS is efficient and economical when a "Scotchlite" Vacuum Applicator does part of the work. William Wenzel of the St. Louis County Sign Shop shows how the applicator permanently bonds reflective sheeting to aluminum panels with professional-looking results.

***FOR MORE FACTS** about a popular program of street or road name signs for your community, see your 3M Representative. Or write to Dept. SK-101 3M Co. St. Paul 6, Minn.*

SAME LOOK AT NIGHT carries out the logic of sign uniformity around the clock. This sign, made of "Scotchlite" Reflective Sheeting, is always on duty. It never leaves motorists in the dark.

SCOTCHLITE®
BRAND
REFLECTIVE SHEETING

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW
3M COMPANY

"SCOTCHLITE" IS A REGISTERED TRADEMARK OF 3M COMPANY

Here is Your Opportunity to Improve Conditions in Your City

These free catalogs will supply many new ideas for municipal money saving.

Write to address given or circle corresponding number on free post card on page 53.

Regulates Pumping Speed

629 A 4-page bulletin explains how a new balance-beam control, called Serv-trol, automatically regulates variable speed drives in water or sewage pumping stations, and how it works on either liquid level or system pressure sensing. Write HEALY-RUFF CO., 2285 UNIVERSITY AVE., ST. PAUL 14, MINN.

Something New in Water Meters

630 New literature from HERSEY-SPARLING METER CO., HERSEY PRODUCTS, DEDHAM, MASS., introduces a new magnetic drive disc water meter—Model MHF—which has sealed register, no stuffing box, standard change gears, and is available in ⅝-inch and ⅝-inch x ¾-inch sizes.

Steel Water Storage Tanks

631 STEEL PLATE FABRICATORS ASSOCIATION, 105 W. MADISON ST., CHICAGO 2, ILL., describes the inherent qualities of welded steel construction and their advantages to steel water tanks—strength, tightness, elasticity, economy, long service life, etc.

Electric Photometer for Water Analysis

632 Adaptable for use in water analysis, the Klett Summerson electric photometer can be used for any determination in which color or turbidity can be developed in proportion to the substance to be determined. Write KLETT MFG. CO., 179 E. 87TH ST., NEW YORK, N. Y.

Surveying, Drafting

633 In a 6-page brochure, KEUFFEL & ESSER CO., THIRD AND ADAMS STS., HOBOKEN, N. J., answers 110 commonly asked questions about reproduction and drafting processes and materials, as well as surveying equipment.

Pipe Tools

634 Hand tools for pipe, tubing and conduit are covered in comprehensive 16-page illustrated Catalog and Price Book, No. NP-6-61, just published by REED MFG. CO., ERIE, PA. Technical data includes cutter wheel reference chart, tables of solid and adjustable pipe and bolt dies.

Split-Case Centrifugal Pumps

635 *Bulletin* 105C describes and illustrates the complete line of single-stage, double suction, horizontal split case pumps manufactured by the AURORA PUMP DIVISION, THE NEW YORK AIR BRAKE CO., AURORA, ILL. Capacities range up to 6000 gpm; heads to 380 feet.

Steel and Aluminum Lighting Standard Equipment

636 An interesting series of catalogs is offered by KERRIGAN IRON WORKS CO., DEPT. A-9, NASHVILLE 2, TENN. Titles are: "A Bright City Is a Safe City," "Seamless Round Tapered Aluminum Lighting Standards," "Octagonal Lighting Standards," "Flood Lighting Standards," "Steel Strain Poles," "Brackets and Mast Arms," and "Traffic Signal Standards."

New Backhoe for Cat Loaders

637 *Form* No. CLX-6112 describes salient features of the Ottawa LX backhoe for Cat Wheel loaders, explains the hows and why of its 30-second couple Hydra-Hitch, lists specifications, provides working range chart. Write EQUIPMENT DIV., YOUNG SPRING & WIRE CORP., BOWLING GREEN, OHIO.

Better Boating Facilities

638 This booklet explains how to go about initiating first class small craft harbor facilities, how to get the job done right; discusses boating safety, growth of pleasure craft use and its impact to coastwise towns of all sizes, and the relationship of the engineering consultation to the development of small craft harbors and marinas. Write PROFESSIONAL ENGINEERING ASSOCIATES, 735 FOREST AVE., BIRMINGHAM, MICH.

Low-Cost Random Access Computer

639 RAMAC 305, Model 2 is designed to meet the needs of government, banking and hospital organizations that have a smaller volume of data to be processed. Monthly rental is $1,850. Write IBM, DATA PROCESSING DIVISION, 112 E. POST RD., WHITE PLAINS, N. Y.

Emergency Traffic Control Systems

640 The only mobile emergency traffic control system to conform to the 1961 revised Manual of Uniform Traffic Signal Devices receives full presentation in this 32-page booklet, which also discusses the problems of controlling traffic under emergency conditions and the solutions. Write RAD-O-LITE, INC., P. O. BOX 306, 1202 MYRTLE ST., ERIE, PA.

New Abrasive Core Drills

641 . . . grind holes in reinforced concrete and other hard materials from ¼″ to 6″ OD, coring holes for ⅓ to ½ the cost of other known methods. The speed drills are suitable for parking meter installation, street repairing, running of service lines. Write THE HOWE-SIMPSON CO., 136 E. GAY ST., COLUMBUS, OHIO.

For Hot-Mix Asphalts

642 *Bulletin* A-32 provides information on Laykold Asphaltic Concrete and Bit-u-mix Bitumuls for hot-mix pavements. Includes data on special features, adaptability and recommended applications for each product. Write AMERICAN BITUMULS & ASPHALT CO., 320 MARKET ST., SAN FRANCISCO 20, CALIF.

New Developments from Bradley Washfountains

643 BRADLEY WASHFOUNTAIN CO., 2203 W. MICHIGAN ST., MILWAUKEE, WIS., has introduced a new adjustable shower head for its column showers and a new metered soap dispenser, said to virtually eliminate soap waste and spilling of excess soap on shower room floors.

Fluorescent Safety Paint

644 A special technical bulletin and color card is available for the new addition to the HI-VIZ line of industrial safety paints—fluorescent "Traffic Yellow." Another detailed, illustrated brochure shows municipal and other applications and design hints of all HI-VIZ paints. Write LAWTER CHEMICALS, INC., 3550 TOUHY AVE., CHICAGO 45, ILL.

Automatic Gravity Filter

645 *Bulletin* WC-130 describes construction, operation and applications of the fully automatic Monovalve filter, which stores its own backwash water, operates on the loss-of-head principle, and is available in single or multi-compartment units. Write GRAVER WATER CONDITIONING CO., 216 W. 14TH ST., NEW YORK 11, N. Y.

Increases Flexibility of 2-Way Radio

646 A new compact control head for G-E's TPL transistorized two-way radio line enables mounting of radio under dash, closer to the driver, or in car trunk without encroaching on cargo space. To get full story, write GENERAL ELECTRIC CO., COMMUNICATIONS PRODUCTS DEPT., SECTION 1101, MOUNTAIN VIEW ROAD, LYNCHBURG, VA.

Utility Tractor Blades

647 Model B-101 has a replaceable cutting edge, 9 angle positions, is easily reversible; moldboard is 6 feet long, 13 inches high. Model B-150 is also reversible; has 9 angle positions, replaceable cutting edge, tilts 12° up or down and offset 20 inches to either side. Both are rear blades. Write PARSONS CO., NEWTON, IA.

Processes Soil Mixes

648 Now you can shred, blend, aerate and remove trash from soil mixes and sludge in one operation, in quantities up to 120 cubic yards an hour. For detailed literature on the Paul Bunyan 360, write ROYER FOUNDRY & MACHINE CO., 182 PRINGLE ST., KINGSTON, PA.

Removes Pavement Markings

649 The portable Liminator breaks the bond between pavement and traffic paint or plastic markers, then scrapes them off. It works on propane gas—a 20-pound tank will operate more than 3 hours. For *Catalog* sheet PR-100, write WINKO-MATIC SIGNAL CO., LORAIN, OHIO.

Reliable Materials Spreaders

650 . . . for winter ice control and for summer resurfacing are described in literature available from SWENSON SPREADER, LINDENWOOD, ILL.—the replaceable tail gate model; the new V-Box style; and the standard forced feed, roll type.

Gravity Sewer Pipe

651 Facts on asbestos-cement gravity sewer pipe that takes tough jobs in its stride, remains infiltration-proof, couples easily, retains smooth, clean bore and has a low friction coefficient, are offered by KEASBEY & MATTISON CO., AMBLER, PA.

For Materials Handling

652 . . . or refuse collection is the way DEMPSTER BROTHERS INC., DEPT. AC-10, KNOXVILLE 17, TENN., bills the Dinosaur-Dinomaster team. Complete information on this flexible system will be sent upon request.

Improve Highway Safety

653 Developed for use in marking airport runways and taxiways for the guidance of aircraft pilots, these button lights can be applied to solve some nighttime highway delineation problems. Write SYLVANIA LIGHTING PRODUCTS, AVIATION & OUTDOOR LIGHTING DEPT., ESTES ST., IPSWICH, MASS.

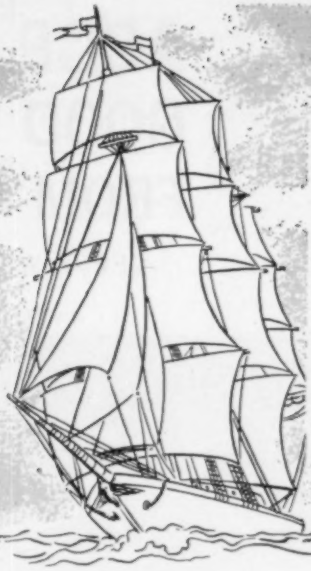
4-Bladed Power Trowel Works Close to Sidewalls

654 A new, 36-inch power trowel, available with 3- or 6-hp gas engine, and with either 3 or 4 blades, has been announced by MULLER MACHINERY CO., METUCHEN, N. J. Declutching mechanism makes engagement of blades easier, gives operator complete control.

(See page 67 for more Bulletins)

Why Rust-Oleum is different-

and what this difference, backed by 35 years of industry proof, means to you!



A Sea Captain developed it . . . Industry proved it!

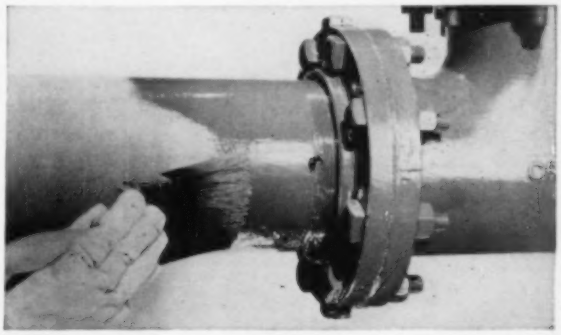
The original Rust-Oleum formula was developed nearly fifty years ago by Sea Captain Robert Fergusson, who became intrigued with the rust-stopping qualities of fish oil early in his career. Creating a *special treatment* for the fish oil, he used the *specially-processed fish oil* as the vehicle in combination with fine rust-inhibiting pigments. The result? A coating that actually *stopped rust* when applied directly over sound rusted surfaces, after scraping and wirebrushing to remove rust scale and loose rust. Possible, because the *specially-processed* fish oil penetrated the rust to bare metal. This was the birth of Rust-Oleum's *exclusive* 769 Damp-Proof Red Primer.

PROVED THROUGHOUT INDUSTRY FOR OVER 35 YEARS

Today, Rust-Oleum in its many systems and colors, has been proved throughout industry for over thirty-five years. This proof by leading industrial users is your assurance of savings in time, money, and metal. Economies made possible by the fact that Rust-Oleum 769 Damp-Proof Red Primer goes right over the sound rusted metal—usually eliminating costly surface preparations. And Rust-Oleum, in its various systems, resists rain, sun, fumes, heat, weathering, chemicals, etc., for lasting beauty over the years.

RUST-OLEUM NEW COLOR HORIZONS SYSTEM

The Rust-Oleum New Color Horizons System introduces a new coating concept to industry. It combines four important factors: (1) the ability to stop rust, (2) smart, modern color harmony, (3) the durability to last and last, (4) ease of application that saves time, money, and metal. See how this system can bring lasting beauty to your plant, machinery, equipment, pipes, tanks, structural steel, fences, etc. Write for complete information or contact your nearby Rust-Oleum Industrial Distributor. He maintains complete stocks for prompt service.



RUST-OLEUM.®

RUST-OLEUM
STOPS RUST!

There are imitations, but only *one* Rust-Oleum. It is distinctive as your own fingerprint.

STOPS RUST!®

ATTACH TO YOUR LETTERHEAD

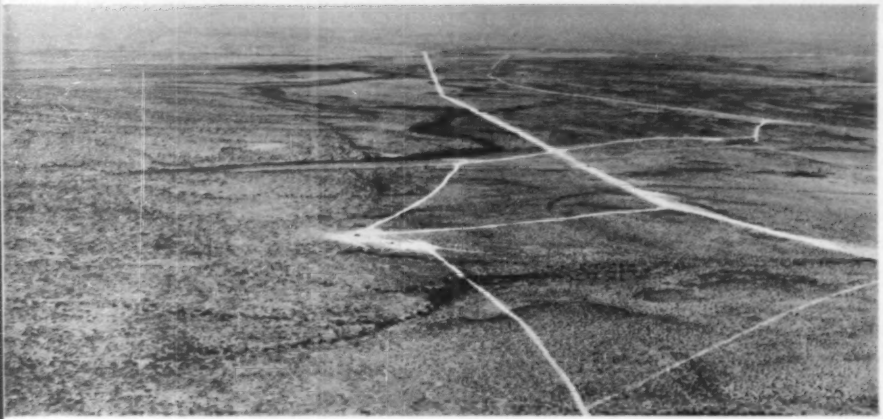
Rust-Oleum Corporation
2605 Oakton St., Evanston, Illinois

Please send me the following at no cost or obligation:

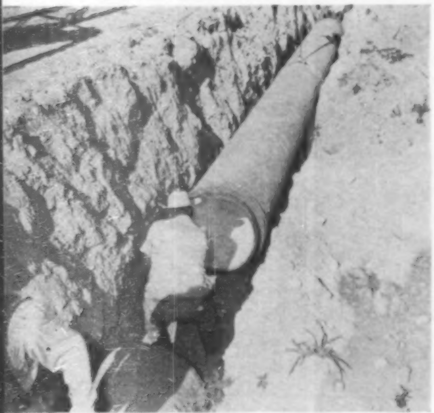
- ☐ New Color Horizons Systems Catalog featuring 110 actual color standards and 69 photo applications.
- ☐ Free test sample of Rust-Oleum 769 Damp-Proof Red Primer to be applied over sound rusted surface.
- ☐ Results of radioactive tracing study on Rust-Oleum fish oil penetration.

ACCP* BRINGS ABUNDANT GOOD WATER TO CARLSBAD FROM ANCIENT DESERT REEF

...OPENS WAY FOR 50 YEARS OF INDUSTRIAL GROWTH!



MAIN TRANSMISSION LINE of 33″ American Concrete Cylinder Pipe extends 33,000 feet northward toward Carlsbad, just below the horizon. Portions of well-collector lines radiate from one of seven automatic pumping stations (white spot in center).



CREW PRECISELY ALIGNS 32-ft. lengths of 24″ American Concrete Cylinder Pipe before joining sections. Installation of the 110,000 feet of gathering and transmission lines was completed substantially ahead of schedule.

PIPE LAYING CRANE easily and quickly joins spigot end of ACCP with bell end of previously laid section.

The City of Carlsbad, New Mexico has taken dramatic steps to meet the challenge of today before it becomes the problem of tomorrow. It can now boast a water system that will meet anticipated growth of industry and populace for the next fifty years without need for enlargement. This progressive city of 27,000 has wisely invested $2,500,000 to bring high quality water through a permanent pipeline system from a 200,000,000-year-old sandstone reef located seven miles away. Capitan Reef accumulates an estimated 60,000 acre-feet of natural recharge annually . . . clean, relatively soft water that will encourage industrial expansion.

The new pipeline system was specifically planned for the future, with 14″ to 36″ American Concrete Cylinder Pipe specified for all gathering and transmission lines. Although designed for gravity flow up to 32,000 gpm. the 150 psi line can be fully pressurized for substantially greater discharge whenever the City's growth warrants. It will never create a bottleneck in Carlsbad's water supply program!

In your plans for the future of your community, it will pay you to consult American Pipe and Construction Co., manufacturers of modern pipe for man's most ancient problem: WATER.

* AMERICAN CONCRETE CYLINDER PIPE

AMERICAN PIPE AND CONSTRUCTION CO.
LOS ANGELES • SAN DIEGO • HAYWARD • PORTLAND • BOGOTA, COLUMBIA
AMERICAN CONCRETE PIPE CO. • PHOENIX • ALBUQUERQUE
Write P.O. Box 3428, Terminal Annex, Los Angeles 54, California
A MEMBER OF THE AMERICAN CONCRETE PRESSURE PIPE ASSOCIATION

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 53.

Records Both RPM and MPH

655 New tachograph Model TCO 14-2 indicates both engine speed and road speed, and records the data on both sides of a single chart, providing tamper-proof record of vehicle operation. For details, write ARGO INSTRUMENTS CORP., 613 W. 46TH ST., NEW YORK 36, N. Y.

Water Analysis Procedures

656 *Catalog* No. 7 (68 pages) offers simplified procedures for water analysis, contains an apparatus section and includes a list of chemicals and solutions for water testing. Also introduces the concept of powdered reagents. Write HACH CO., AMES, IA.

Seepage-Proofs Reservoirs

657 Prefabricated asphalt linings are used successfully to reline cracked, seeping monolithic reservoirs and in the construction of new potable water reservoirs for raw and treated water. Engineering brochure gives comprehensive view. Write GULF-SEAL CORP., MELROSE BLDG., HOUSTON 2, TEXAS.

Controls Objectionable Odors

658 Sani-Septic Concentrate is a water emulsifiable chlorinated solvent that can be used in garbage and refuse disposal, sewage treatment, drainage ditches, storm sewers and refuse cans to destroy odors. Write WERLEY CHEMICAL & SUPPLY CO., 1505 BROADWAY, CLEVELAND 15, OHIO.

Designed for Large-Area Mowing

659 Ford's new 84-inch rotary cutter speedily and economically mows lawns and pastures, clears weeds right up to trees, cuts heavy brush, mows road shoulders. Cutting height is adjustable from 2 to 7 inches. Details available from FORD MOTOR CO., TRACTOR AND IMPLEMENT DIV., BIRMINGHAM, MICH.

Useful Pump Selector Guide

660 "When You Buy Your Pump" describes factors to consider in selecting pumps for water supply or booster service, compares types, includes a comparison checklist to aid in selection of the most desirable features of submersible pumps. SUMO PUMPS INC., BROWN HOUSE RD., STAMFORD, CONN.

Compact Sewage Treatment Plant

661 A series of compact sewage treatment plants suitable for small municipalities, housing developments, or business is announced by DORR-OLIVER INC., STAMFORD, CONN. The series is available on a purchase or lease-rental program.

Portable 2-Way Radio

662 MOTOROLA INC., COMMUNICATIONS AND INDUSTRIAL ELECTRONICS DIV., 4501 W. AUGUSTA BLVD., CHICAGO 51, ILL., has introduced a new line of "Handle-Talkie" portable 2-way radiophones with fully transistorized receivers that double battery life and cut operating costs in half.

Park Maintenance

663 INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL., offers the industry's widest range of tractor power sizes—9 tractors from 7 to 95 hp—with matched equipment to fit your park maintenance needs exactly and to help your park maintenance budget go farther.

Improved Seal Coating

664 A 12-page booklet gives a step-by-step description of the Spread-Master seal coating method, said to produce material savings of 20%, better non-skid surfaces and better reflection of light, and to sharply increase production. Write FLAHERTY MFG., INC., P. O. BOX 1387, POCATELLO, IDAHO.

Interviewing Witnesses

665 Any person interested in the science of witness interviewing will find this paper an excellent guide to improving his own technique. It's packed full of do's and dont's. Write JOHN A. KENNEDY & ASSOC., INC., 53 W. JACKSON BLVD., CHICAGO 4, ILL.

Guide to Good Lighting

666 In a 25-page, two-section booklet, HOLOPHANE COMPANY, INC., STREET LIGHTING DEPT., NEWARK, OHIO, presents important design and application data on Holophane street lighting refractors. Also available, details on a "Fight-Danger-With-Light" Program.

Protective Coatings

667 Six new product folders gives full facts on protective industrial cold coatings available from TAR PRODUCTS DIV., KOPPERS CO., INC., PITTSBURGH 19, PA. Product, what it does, where it's used, surface preparation required, application data, included.

Police Motorcycles

668 If you've not seen the new, 12-page police motorcycle brochure issued by HARLEY-DAVIDSON MOTOR CO., DEPT. AC-10, MILWAUKEE 1, WIS., chances are thet you're not up to date on the company's versatile Solos and all-purpose Servi-Cars.

Compression and Power

669 The complete line of Cooper-Bessemer engine and motor-driven compressors, power engines, expansion engines, industrial jet-powered gas turbines, and En-Tronic Control engines is presented in this 14-page bulletin just released by THE COOPER-BESSEMER CORP., MT. VERNON, OHIO.

Kills Objectionable Odors Fast

670 Solvex Concentrate cuts slime and grease, prevents spread of fungi, controls growth of sulphide-producing microorganisms, gives long-lasting odor control, makes possible odorless sewage plants. Write NATIONAL CHEMSEARCH CORP., P. O. BOX 10087, DALLAS, TEXAS.

Waste Treatment Aid

671 Bionetic digests grease and sludge, eliminates odors and stoppages in sewage plants, sewer lines, septic tanks, cess pools. Applications, dosage and approaches to specific problems explained in 4-page catalog. Write RELIANCE CHEMICAL CORP., P. O. BOX 19343, HOUSTON 24, TEXAS.

Steel Water Pipe

672 By writing to ARMCO DRAINAGE & METAL PRODUCTS, 7081 CURTIS ST., MIDDLETOWN, OHIO, you can obtain complete information on steel water pipe that is both durable and efficient in carrying capacity and designed to resist washouts, traffic vibrations, soil settlements.

Street and Highway Traffic Signs

673 Die-embossed steel traffic signs offer an extra measure of visibility and safety, are attention-compelling day and night. LYLE SIGNS, INC., 2720 UNIVERSITY AVE., S.E., MINNEAPOLIS 14, MINN.; NSE SIGNS AND STAMPINGS, P. O. BOX 1069 BIRMINGHAM 1, ALA.; MIRO-FLEX CO., INC., 1824 E. 2ND ST., (BOX 514), WICHITA 14, KANS., GOPHER STAMP AND DIE CO., CHICAGO AVE. AND CUSTER ST., ST. PAUL 7, MINN.; GRIMM STAMP & BADGE CO., 8105 ROSALIE AVE., ST. LOUIS 17, MO., will supply catalog information on request and quotations on these economical traffic guardians.

Keep Turf Resilient

674 Renovaires offer true-contour aeration through individual wheel-weighting trays and are said to be the first to offer all-season aeration that doesn't interfere with golf or other sports activities. For details, write RYAN LANDSCAPE EQUIPMENT CO., 871 EDGERTON ST., ST. PAUL 1, MINN.

Digging, Loading All Over Town?

675 By writing to J. I. CASE CO., DEPT. K 1561, RACINE, WIS., you can find out how municipal digging, lifting, loading, carrying and other diverse and widely scattered jobs can be done faster with no increase in budget through use of 430 *Utility* tractors.

Snow Removal Made Easy

676 With power hydraulic controls snow is removed, not fought. Illustrated folder from MONARCH ROAD MACHINERY CO., 1363 MICHIGAN ST., N. E., GRAND RAPIDS 3, MICH., explains how these controls on snow removal equipment assure instant snow plow action, from the cab with the flick of the wrist.

Vacuumized Street Sweepers

677 Those who like their city's streets swept really clean, without dust nuisance, without water, without skyrocketing costs, will want to ask G. H. TENNANT CO., 751K N. LILAC DRIVE, MINNEAPOLIS 22, MINN., about its new system—"precision" vacuumized sweeping.

Corner-Mounted Derrick

678 This powerful, time-saving derrick can live-boom 8,500 pounds, winches 10,000, operates in an arc behind and to the right or left side of truck, digs deep holes, sets poles up to 70 feet in length. Write HOLAN CORP., 4100 W. 150TH ST., CLEVELAND 30, OHIO.

Free Truck Information

679 Descriptive literature and specifications on new 1962 Chevrolet trucks is offered by CHEVROLET MOTOR DIVISION, P. O. BOX 7271, DETROIT 2, MICH. Full line brochure, Corvair 95 models, Pickups and Light Duty, Diesel-Powered Models, Medium & Heavy-Duty are among literature available.

Playground Equipment

680 A new combination slide and climber, the Hill and Dale, is designed for the primary grade levels and features safety and durability in its components. BOB WORMSER, GAME-TIME, INC., LITCHFIELD, MICH., can supply full details.

Doubles Clarifier Capacity

681 Descriptive literature explains the principle behind the Rex Rim-Flo Clarifier, shows how the unit will at least double the flow of a conventional tank and at the same time provide maximum efficiency. For copy, write CHAIN BELT CO., 4648 W. GREENFIELD AVE., MILWAUKEE 1, WIS.

Push-Button Record Keeping

682 The Electrofile ends tedious refiling, eliminates the possibility of misfiling, speeds up record-handling, saves time and money. ACME VISIBLE RECORDS, INC., 8610 W. ALLVIEW DRIVE, CROZET, VA., will provide full facts and applications of this new filing system.

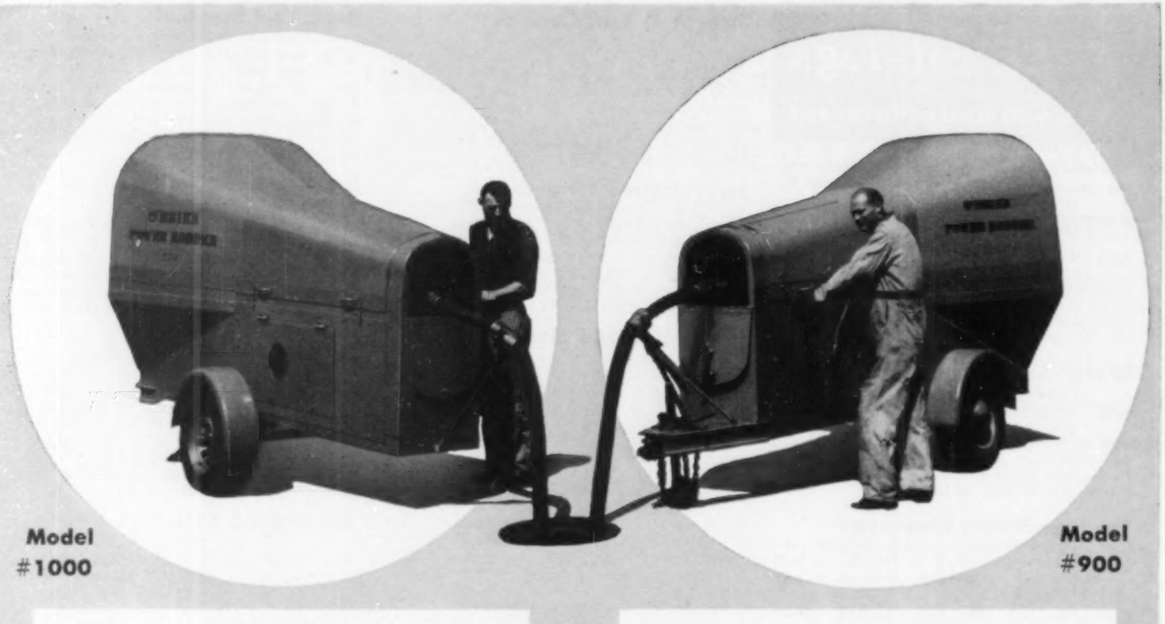
Use Your Sewage Gas

683 Numerous cities fill their power needs by using sewage gas for fuel. WAUKESHA MOTOR CO., WAUKESHA, WIS., will supply literature on ROIline engines, which burn sewage gas.

Infra-Red Highway Patchers

684 New Model HE-PR-32 is used for patching holes in black top as well as for removing rough spots caused by traffic and heat. *Bulletin* HE-PR-1 gives full details; write AEROIL PRODUCTS CO., INC., SOUTH HACKENSACK, N. J.

(See page 69 for more Bulletins)



Model
#1000

Model
#900

CONTINUOUS ROD

SECTIONAL ROD

For Sewer Cleaning and Threading . . .

. . . which do you prefer?

O'Brien has both!

Whatever the reasons . . . personal preference or custom job requirement, O'Brien offers a choice of either continuous rod or sectional rods. Select a powerful "man-sized" unit that features the greaest advancement in compact design and engineering ever offered!

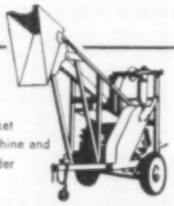
Uncontested champions for economy and efficiency

Dynamic, positive drive and pull back power, automatic safety throwout control, fully enclosed body, uses 5/16" or 3/8" rod, simple one man operation, footage meter, 9 or 12hp. engine with 12 volt starter, generator and battery . . . plus other outstanding O'Brien features. Units available in truck mounted design for fast, easy mobility.

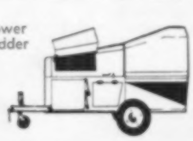
It's wise to get the best!

The savings in better performance and greater efficiency is worth the few dollars more to get the very best there is —O'Brien! The complete line of O'Brien powerized sewer cleaning equipment reflects years of actual experience in sewer maintenance. Here, truly is time-tested equipment, designed to custom-fit any job requirement.

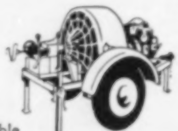
Get a FREE demonstration to see—how and why —O'Brien is the "cadillac" in sewer cleaning equipment.



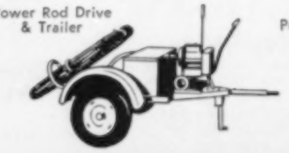
Bucket Machine and Loader



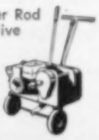
Power Rodder



Cable Machine



Power Rod Drive & Trailer



Power Rod Drive

O'Brien MANUFACTURING CORP.

5636 NORTHWEST HIGHWAY • CHICAGO 46, ILL.
ROdney 3-7433

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 53.

Chain Saws

685 Top performance, lightweight rugged construction and moderate price are reported to be leading features of the Bolens Swifty and Thrifty, both well-suited for wood cutting—felling, bucking, limbing or trimming. For descriptive literature, write BOLENS DIVISION, FMC CORP., PORT WASHINGTON, WIS.

Handle Raw and Digested Sewage Sludges

686 A complete line of plunger sludge pumps with capacity range up to 500 gpm and with pressures up to 125 pounds per minute are described in literature available from MARLOW PUMPS, division of BELL & GOSSETT CO., MIDLAND PARK, N. J.

De-Icing Programs Can Win Public Support

687 MORTON SALT CO., INDUSTRIAL DIVISION, DEPT. AC-10, 110 WACKER DRIVE, CHICAGO 6, ILL., can show you how your community can have an ice control program that cuts accidents and complaints. So why not ask about the advantages of a Safe-T-Salt program today?

Saves $400 per Month on Accounting Procedures

688 The many time- and money-saving features of a National accounting system have posted an impressive record in the Township of Morris, Morristown, N. J.—$4,800 a year saved, a return of 61% annually on investment. THE NATIONAL CASH REGISTER CO., DAYTON 9, OHIO, can supply details, and help with your particular accounting-billing problems.

Precast Concrete Sewer Elements

689 Concrete manholes and a variety of pipe styles, precast to assure faster installation at less cost are the subjects of product literature offered by AMERICAN-MARIETTA CO., CONCRETE PRODUCTS DIV., ONTARIO ST., CHICAGO 11, ILL.

Pumps, Water Wells, Water Treatment

690 *Bulletin* 100 will acquaint or bring you up to date on the complete water services available from LAYNE & BOWLER, INC., MEMPHIS 8, TENN., which include initial surveys, foundation and soil sampling, well drilling, chemical treatment of water wells, etc.

Stop Rust with Color

691 Rust-Oleum does, and it's easy to apply and durable. For free test sample, Color Horizons Systems Catalog featuring applications, also, and results of radioactive tracing study on Rust-Oleum fish oil penetration, write RUST-OLEUM CORP., 2605 OAKTON ST., EVANSTON, ILL.

Hydrants and Valves

692 Information on a complete line of valves and hydrants for water works and fire protection systems and other water-works specialties is yours for the asking; write EDDY VALVE CO., WATERFORD, N. Y.

Can You Save Your Elms?

693 DAVEY TREE EXPERT CO., KENT 16, OHIO, the oldest and largest tree saving service in the world, reports that it's possible to save elms not infected with Dutch elm disease even though they're in an area already infected. But let MARTIN L. DAVEY, JR., president, tell you how.

Smoke Ejectors

694 *Booklet* 58 gives useful fire-fighting and emergency hints, serves as an operational guide for Super Vac Smoke Ejectors, which exhaust smoke and fumes and blast fresh air into smoke-congested area. Written by firemen for firemen. Write SUPER VACUUM MFG. CO., INC., 1055 E. FIRST ST., LOVELAND, COLO.

Water Treatment Plant Design and Control

695 *Bulletin* Ref. No. 2-1.20-1 explains a new concept in water treatment plant design and control, shows how finger-tip control throughout the entire plant improves process supervision, increases reliability, and reduces overall plant construction costs by 15% to 20%. Write B-I-F INDUSTRIES, P. O. BOX 276, PROVIDENCE, R. I.

Insulated Water Meter Coupling

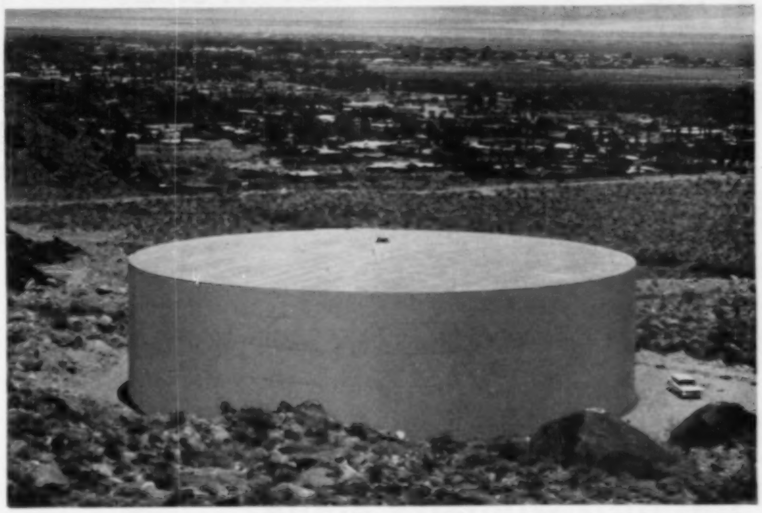
696 Advantages offered by this type of coupling include corrosion resistance from electrolysis and dissimilar metal connections; reduction of metal vibration noises; can be installed in existing services without changing piping. For details, write MODERN UTILITY SUPPLY CO., INC., 2119 N. ROSEMEAD BLVD., EL MONTE, CALIF.

New Manhole Riser Cushion

697 This product combines steel and rubber to end noise and reduce wear on worn manhole covers and frames, eliminating costly manhole repair, absorbing and dissipating road shock from heavy traffic. For literature, write UTILITIES SUPPLY DIV., CENTRAL STATES INDUSTRIAL SUPPLY CO., TERMINAL TOWER, CLEVELAND 13, OHIO.

(See page 70 for more Bulletins)

PALM SPRINGS chose a STEEL TANK



. . . the *only* type of water storage tank built to AWWA standards!

Palm Springs, the California desert playground of movie stars and sun-worshippers, is a thirsty city. There are more gardens and swimming pools per capita than any other place in the world. Fortunately, the San Jacinto Mountains have an abundance of underground streams. A new 5,000,000 gallon steel reservoir, erected on the side of rugged Mt. San Jancinto provides the necessary storage and pressure for the vital water supply.

STRENGTH
TIGHTNESS
ELASTICITY
ECONOMY
LONG LIFE

. . . these are inherent qualities of welded *steel* construction. Compare *steel* tanks with other types . . . you'll see why "steel tanks store water best." You can always specify *steel* tanks with confidence.

More Than 10 out of 11 Water Storage Tanks Are Constructed of STEEL

STEEL PLATE FABRICATORS ASSOCIATION
105 West Madison Street • Chicago 2, Illinois

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 53.

Municipal Traffic Engineers

698 Now you can obtain new pre-cut aluminum letters, numbers, shapes, borders, arrows, furnished plain or with plastic lenses, reflective sheeting or unfinished, to make traffic and street name signs in your own municipal shop. Ask THE MIRO-FLEX CO., INC., 1824 E. SECOND ST., WICHITA 14, KANS. about it.

Better Seals for Concrete Pipe

699 Type 1-RS-3M molded gasket makes a two-way seal in recessed concrete sewer pipe. It's to be used in conjunction with a recess in the tongue or spigot end of concrete pipe and is available in Natural and Styrene-Butadiene rubber for common sewage. *Manual* No. 4 gives details; write PRESS-SEAL GASKET CORP., P. O. BOX 482, R.R. 6, COVINGTON RD., FORT WAYNE, IND.

Evaluating Aeration Equipment

700 Important basic data for evaluating aeration equipment in activated sludge plants and in aerobic digestion plants, and aerator performance studies, are now available from YEOMANS, 2000-3 N. RUBY ST., MELROSE PARK, ILL., manufacturer of the Hi-Cone surface aerator for all sizes of waste treatment plants.

Elevated Water Storage

701 "Modern Elevated Water Tanks" explains the benefits of storing water in above-ground Waterspneres and Waterspheroids. It is available from CHICAGO BRIDGE & IRON CO., 332 S. MICHIGAN AVE., CHICAGO 4, ILL. Request *Bulletin* A-40.

Takes the Stretch Out of Overhead Maintenance

702 A 4-page illustrated folder gives construction features, options, mountings, and other details of a work platform of adjustable height that lifts big loads and is to be used to perform overhead jobs in construction or maintenance work. Write WITCH MARKETING CO., P. O. BOX 249, PERRY, OKLA.

If It's Got to Be Delivered

703 . . . whv not deliver it in a 'Jeep' Fleetvan? asks WILLYS MOTORS, INC., TOLEDO 1, OHIO, FLEET SALES MGR. R. J. KREUSSER, who'll send on request, literature explaining the new economy, new safety, new efficiency of this unit and its applications to government service.

Lighting Standards

704 Graceful, sturdy, functionally-designed lighting standards, with tapered integral welded steel base are characteristics of Elite standards, which are given full technical treatment in *Booklet OTA*, available from MILLERBERND MFG. CO., WINSTED, MINN.

A New Parking Meter

705 . . . saves time all around—on time checking meters, on maintenance, and it saves receipts collected. It is called the Sentinel, and has been introduced by M. H. RHODES, INC., HARTFORD, CONN., which is making available detailed literature on this compact unit.

Hazard Warning Flasher

706 Dietz' No. 675 Visi-Flash delivers a 71 candlepower warning flash 65 times per minute for 4500 hours and is available with 10 different circuits. Power source is 6-volt lantern-sized batteries. Write JOSEPH H. EMERY, R. E. DIETZ CO., 225 WILKINSON ST., SYRACUSE 1, N. Y.

Paints That Last 25% to 50% Longer

707 . . . certainly are worth finding out about, don't you think? DOW CORNING does, too. That's why it's prepared the booklet "Why Silicone-Based Paints Mean Less Maintenance." Address requests to DEPT. 0722, MIDLAND, MICH.

Diatomite Filtration Aid

708 Celite is used to remove suspended solids (including amoebae, floc, algae) while maintaining maximum flow rates. JOHNS-MANVILLE, BOX 325, NEW YORK 16, N. Y., reports that Celite Filtration doubles clear water capacity at half the installed cost. Literature available.

Oxidizes Away Difficult Water Problems

709 Carox eliminates tastes and odors, iron and manganese. It's easy to handle, noncorrosive, and an effective biocide. Literature from CARUS CHEMICAL CO., INC., 1379 EIGHTH ST., LaSALLE, ILL., also reports that it provides a coagulant-aid, minimizing quantity requirements on other chemicals.

Loud Warning Horns and Systems

710 . . . that allow loudness as required, range as required, location where most effective, any type of central control are the subject of *Bulletin* FS-761, offered by FALCON ALARM CO., INC., SUMMIT, N. J. Intensely loud signals of 123-128 decibels possible.

(See page 73 for more Bulletins)

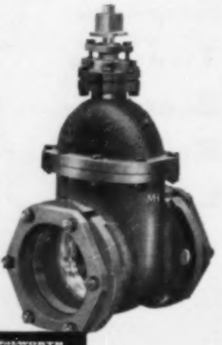
MH Roll-call for water

the Bird Woman's home

When Lewis and Clark first explored western United States, they found an exceptional Indian woman in what is now Missouri. Her name was Sacajawea (said to mean bird woman) and her services as guide and interpreter to the expedition were invaluable. It was a wild and rough journey. There were no cities and no public water distribution system in the Prairie Belt states in those days. But the report of their expedition inspired thousands of eastern people to organize wagon trains and start West from St. Louis, as Lewis and Clark had done, up the Missouri River and her tributaries.

Today this Prairie Belt of 7 west-north-central States produces grain and is sometimes called America's bread basket. The Indians and the buffalo are gone. In their place are modern farms, homes, highways, railways, airports and cities. Of the 40 cities of 25,000 population or more, 29 have adequate water systems, 5 have water works of uncertain efficiency, and 6 have water works which are definitely deficient in overload capacity.

Minnesota
Iowa
Missouri
North Dakota
South Dakota
Nebraska
Kansas



M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

A WALWORTH SUBSIDIARY

This is how you measure

Dependability of a Mack gasoline or diesel engine

When it's 15° below and ice forms as the water hits, or whenever fire apparatus must face the extreme demands of fire fighting, that's the time to get the full measure of an apparatus' engine performance.

Does it start dependably . . . have the reserve power for the most grueling operations in any climate and terrain . . . pump hour after hour for as long as needed?

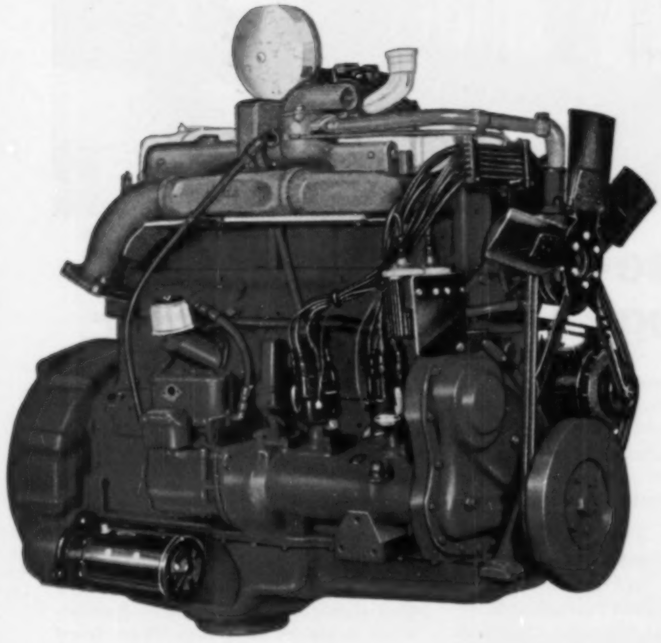
Thermodyne® engines that power Mack fire apparatus, both gasoline and diesel, meet every fire-fighting assigment because they've got the stamina that's made Thermodyne synonymous with dependable, powerful, high-output performance.

This is the stamina that stems from Mack engineering know-how and Mack's many powerplant advances—Everlasting timing gears . . . Durafaced valve lifters . . . full-length water jackets . . . and gear-driven air compressor.

Select your next fire apparatus and the engine that powers it to meet the most demanding assignment you'll ever face, and you'll specify Mack fire-fighting equipment powered by one of the world-famous Thermodyne engines. Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

7935

Mack offers three Thermodyne engines to best meet your requirements



Model ENF-707C Gasoline. Largest and most powerful of Mack-built Thermodyne fire apparatus engines, this 707 cu. in. powerplant develops 276 hp. High volumetric efficiency is achieved through opposite intake and exhaust porting and Mack's exclusive combustion chamber design.

Model ENF-540 Gasoline. For smaller apparatus and where the higher horsepower of the 707 cu. in. engine is not needed, Mack offers this 540 cu. in. engine which nevertheless delivers in excess of 200 hp at moderate rpm. It has all the design and engineering features that have made Thermodyne the first name for fire apparatus powerplants.

Model ENDT-673 Diesel. Already proved in millions of miles on the nation's highways, the famed Mack Thermodyne diesel engine is finding increased interest for fire apparatus where its many advantages make it the ideal powerplant. These advantages include: complete absence of an ignition system with its accompanying spark plug, breaker point and coil maintenance complications . . . fuel of lower flash point, hence a safer fuel . . . 24-volt electrical system for quicker, surer starts . . . high torque at low speeds . . . and, for departments where superior fuel economy is important, more work out of less fuel with a diesel engine. Developing 230 hp, the Turbocharged Thermodyne is finding new boosters among fire departments everywhere.

MACK FIRST NAME FOR **FIRE APPARATUS**

Durable "Defense-in-Depth" paint stays like new through long Maine Winter

Interrupted job on big Kennebec Bridge shows how Basic Lead Silico Chromate pigment combines outstanding weather resistance with rust inhibition.

On Maine's mile-long double-decked Kennebec Bridge — during a recent severe Winter—"Defense-in-Depth" was proved to be no catch-phrase.

Which coat is the fresh coat? Half the bridge received its finish coat in the Fall, after spot priming—and an intermediate coat where necessary. Then the job waited out the Winter. When the finish coat was completed on the other half in Spring, it was hard to tell the difference between the two sections. The half painted the previous Fall had not weathered noticeably.

Rust inhibition, weather resistance and durability . . . all three advantages are combined in paints containing *M50*® Basic Lead Silico Chromate pigment. All three properties can be provided in *every* coat—primer, intermediate and finish. This is "Defense-in-Depth"—anti-rust action that goes from the primer up through the finish coat, plus durability that goes from the finish down through the primer.

Now used by 11 states for bridges and structures, *M50* pigment is proving these and other benefits. It restricts underfilm rust creepage. It's tintable—with a low color strength permitting high pigmentation in almost all shades. To get more helpful information, simply write to National Lead Company.

M50 an **oncor**® Pigment...
A Development of **National Lead Company**
General Offices: 111 Broadway, New York 6, N.Y.

FREE catalogs

Write to address given or circle corresponding number on free post card on page 53.

Concrete Facts

711 Pozzolith is a water-reducing, air-entraining, admixture for concrete. This 6-page gatefold folder points out its action and benefits in terms of concrete strength, durability, permeability, bond strength, scale resistance, volume change. Write THE MASTER BUILDERS CO., CLEVELAND, OHIO.

Kills Mosquitoes

712 . . . controls larvae and adults, controls resistant strains, delivers 90% kill in area control work. To find out more about malathion-Lethane combination, write to AMERICAN CYANAMID CO., AGRICULTURAL DIVISION, PRINCETON, N. J.

Store Salt for a Safer Winter

713 Capricious Dame Nature would just as soon let go with severe snow, sleet, or freezing rain storms in October as in January. One way to prepare for her untimely frolic is to have plenty of rock salt on hand. Why not ask INTERNATIONAL SALT CO., CLARKS SUMMIT, PA. about Sterling rock salt and Storite?

Water Service Products

714 Latest additions to the HANDLEY INDUSTRIES, INC. line include telescoping, non-corroding curb boxes; a water "Meterminder" that puts an end to costly call backs, and roadway valve boxes. Full facts and literature available; write to 901 BELDON RD., JACKSON, MICH.

Durable, All-Purpose Pails

715 Subject of new catalog from FORTEX INDUSTRIES, INC., 44 WHITEHALL ST., NEW YORK 44, N. Y., are reinforced, acid- and chemical-resistant molded rubber-fiber pails for just about every purpose that a pail can be used. Standard sizes up to 10 gallons.

Protects Pedestrians

716 An 8-pound school-monitored gate that covers a full lane of traffic, positively curbs pedestrian traffic, provides a safety path to protect children as they cross the street, effectively stops motorists. Full facts from TRAFFI-TROL SAFETY GATE CO., STEUBENVILLE, OHIO.

Mobile FM Radio

717 Transistor-powered aluminum-constructed Slimline weighs only 8 pounds, 11 ounces, fits easily under the dash. Battery drain is low. Optional features include up to 3 transmit and receive channels. Write AERONAUTICAL ELECTRONICS, INC., BOX 6527, RALEIGH, N. C.

Keeps Track of Keys

718 A 16-page booklet explains how the Telkee key control system, available in 10 models, 33 capacities from 21 to 2240, keeps keys from getting strayed, lost or stolen and at the same time saves time and money. Write P. O. MOORE, INC., GLEN RIDDLE 52, PA.

Pipe Repairs Made Easy

719 That's what the Dresser 360 clamp is designed to do and that's what it does. How it does is the story told in detailed catalog literature offered by DRESSER MANUFACTURING DIVISION, BRADFORD, PA.

To Catch a Speeding Vehicle

720 Brochure illustrates how Foto-Patrol provides complete record and accurate proof of speeding violations, around the clock, in all weather, by combining advanced computer science with automatic film technique. Write AMERICAN FOTO-PATROL CORP., 63 71ST ST., GUTTENBURG, N. J.

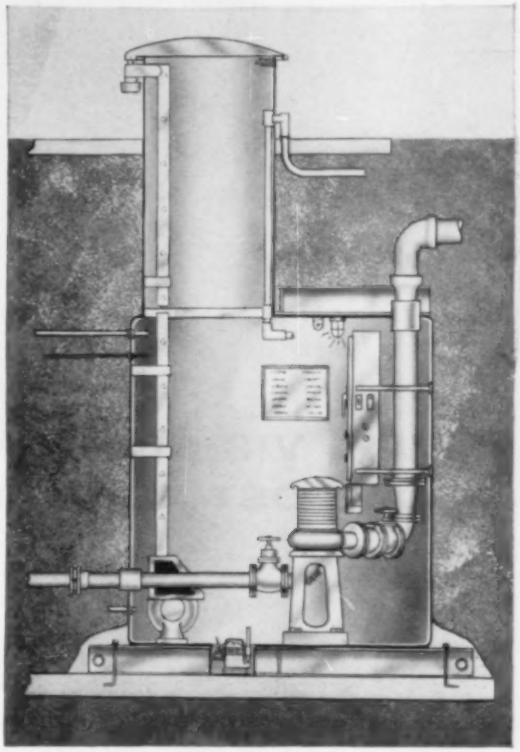
(See page 79 for more Bulletins)

weil
PUMP
COMPANY

FACTORY ASSEMBLED SEWAGE LIFT STATIONS

America's Leading Manufacturer Of Pumping Equipment
Now Offers The Ultimate In Packaged Pumping Stations

- Automatic Operation
- One Day Installation
- No Field Welding
- Non-Clog Sewage Pumps
- Automatic Controls
- Floodproof Station
- Minimum Maintenance
- Dehumidified Ventilation
- Completely Guaranteed

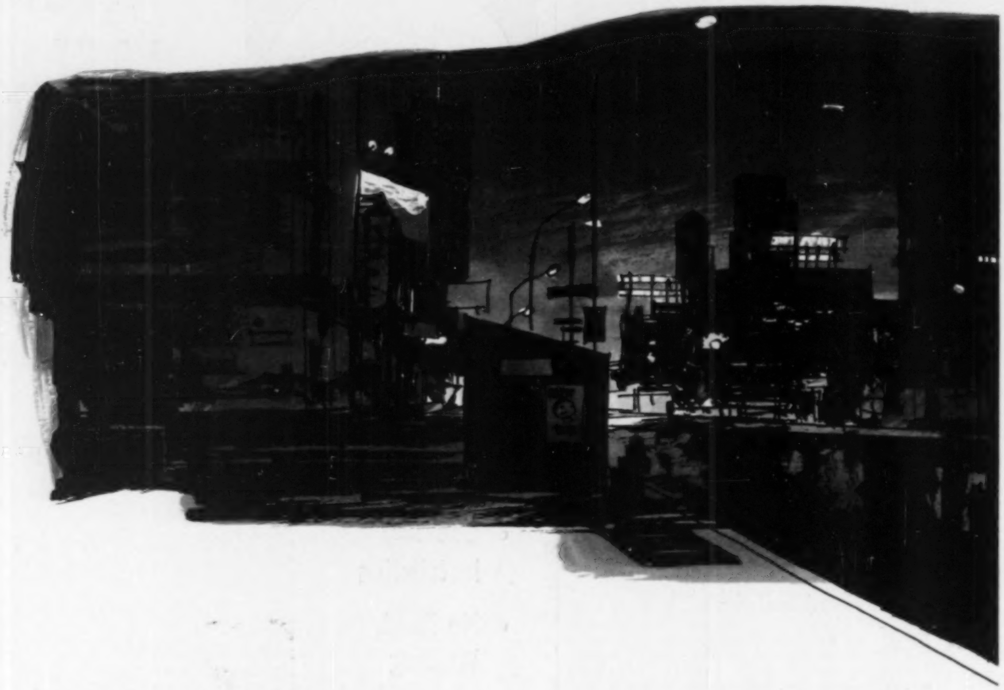


Weil Pump Company has engineered and manufactured a pre-fabricated sewage lift station to meet your specifications and demands. All the finest Weil equipment; factory assembled, pre-wired, tested and delivered to your site ready for fast, easy installation.

Send for
BULLETIN
NO. LS 2200

weil PUMP COMPANY
1518 North Fremont Street, Chicago 22, Illinois

AUSTIN-WESTERN PRODUCTS SAVE TIME AND MONEY



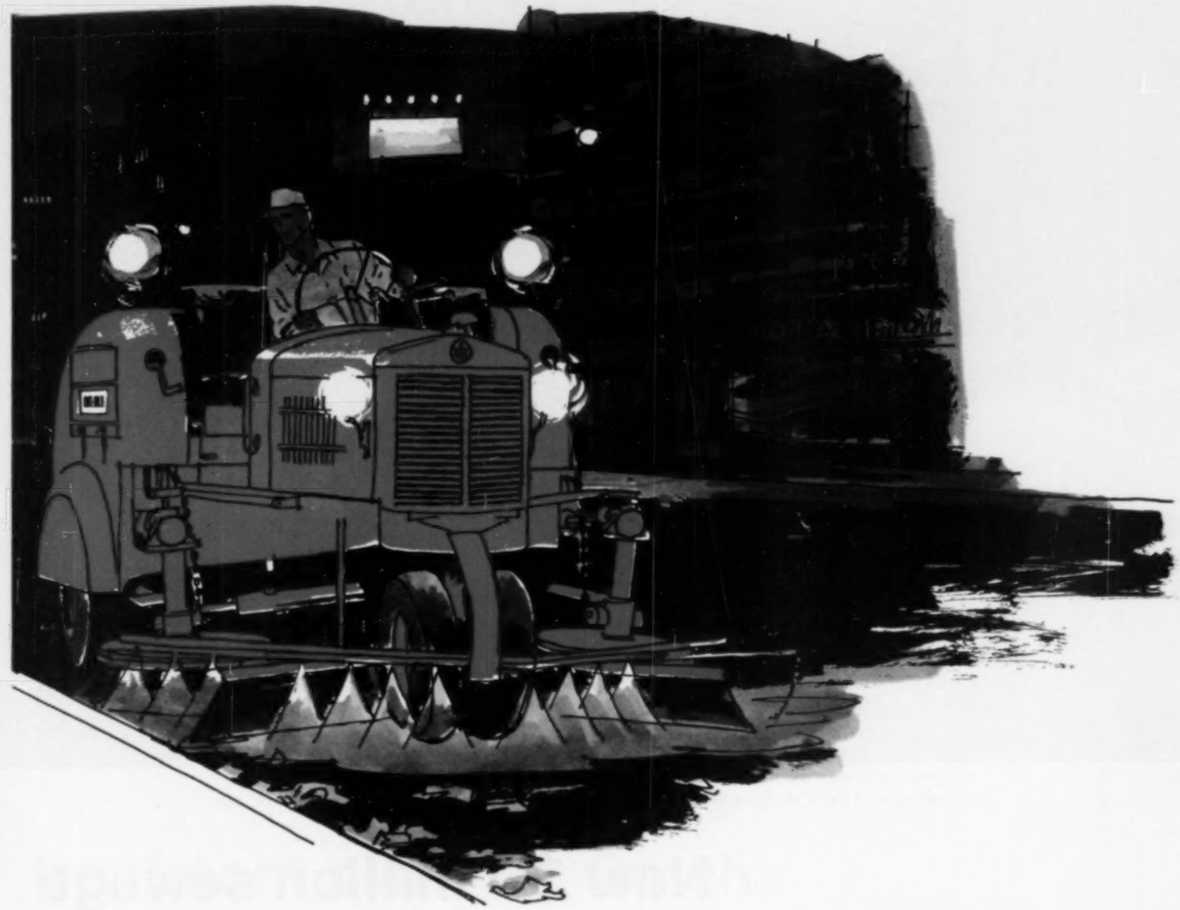
FULL VISIBILITY FOR NIGHT SWEEPING; 50% COST REDUCTION PER GUTTER MILE!

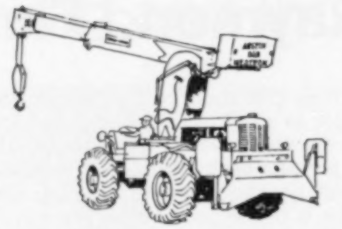
Greater visibility means more safety and sweeping efficiency . . . even at night . . . in towns, at schools, shopping centers, airports, in industrial areas. Austin-Western motor sweepers assure high visibility because the driver is ahead of the hopper and can always see his gutter broom and the street ahead; no dangerous blind spots. Automotive-type front steering produces unmatched maneuverability and handling ease for clean sweeping close to obstacles, cars and corners.

Sweeping costs per gutter mile are cut in half because A-W's 2-yd. Model 40 does not have an elevator or conveyor. Its patented deflector bar simply flicks bricks, bottles, cans, sticks, stones, dirt and debris directly into hopper. No complicated, troublesome mechanisms to repair and maintain. Think how much this feature alone would save you annually in tax dollars!

Rear dumping speeds unloading; dump and drive away in less than a minute. Choice of right, left or dual gutter brooms. Built-in hopper flushing system reduces maintenance. Plus many other design and operational features to save time and money.

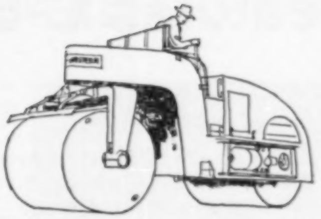
Why not find out more about cleaner-sweeping Austin-Westerns. 2 models—2-yd. Model 40 and 4-plus-yd. Model 60; all-weather cabs optional. Ask your nearby A-W distributor or write direct to us here in Aurora.





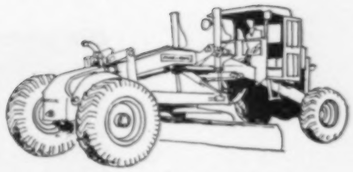
A-W HYDRAULIC CRANES

5 models. Capacities to 11 tons. Self-propelled and truck or stationary mounting. "Live" hydraulic booms extend up to 48 ft. on some models.



A-W COMPACTION EQUIPMENT

Variable weight 2- and 3-wheel rollers to 14 tons; 3½-6 ton portable tandem; Roller-Compactor; vibratory attachment for most 3-wheelers. Also new 9-wheel pneumatic roller.

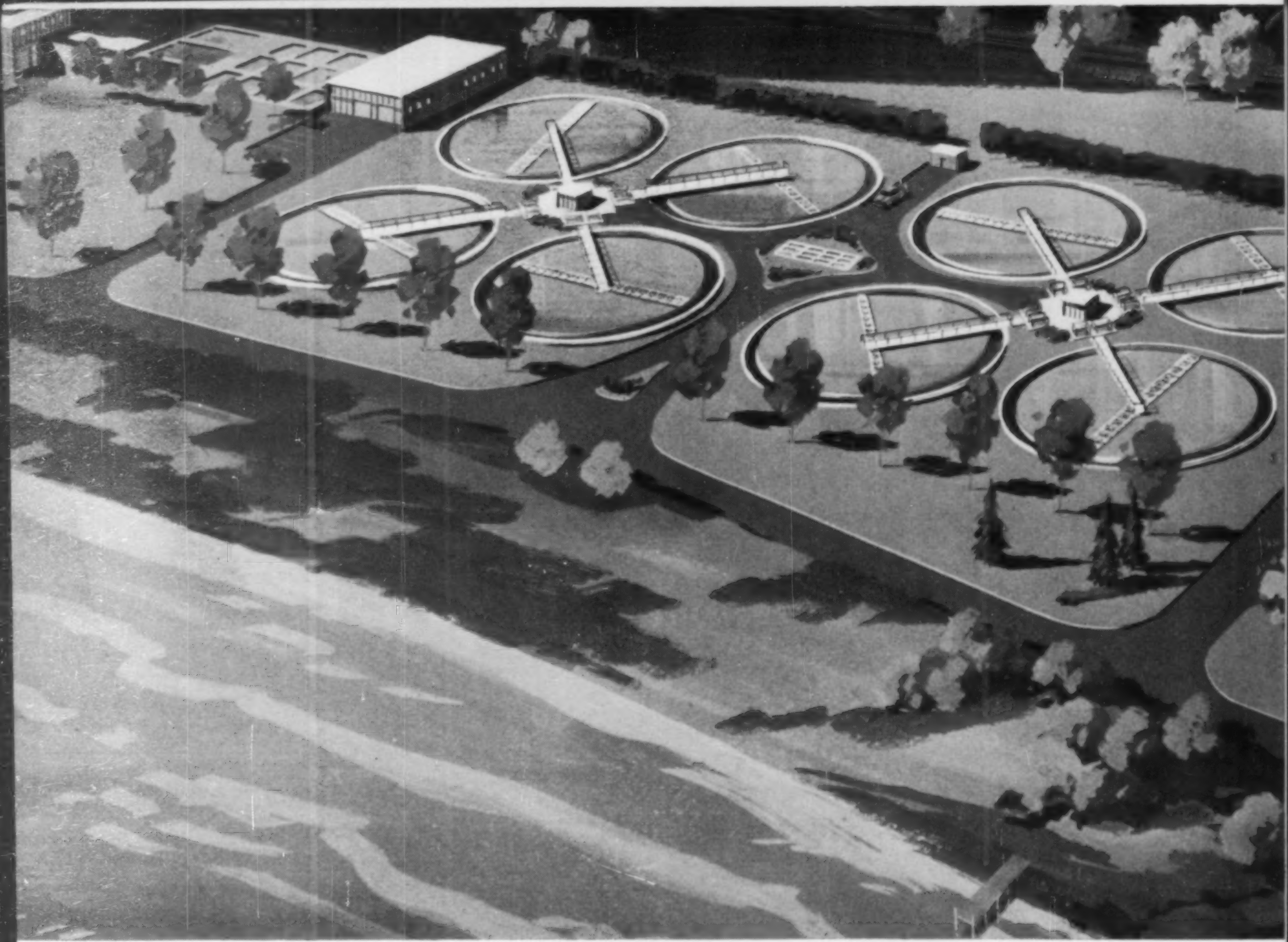


A-W POWER GRADERS

9 models; all-wheel drive and steer 4-wheel Pacers and 6-wheel Supers. Weight classifications to 30,000 lb., power ranges to 176 hp.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON



New $9 million sewage features C-E Raymond Flash

Omaha selects C-E Raymond for second major installation

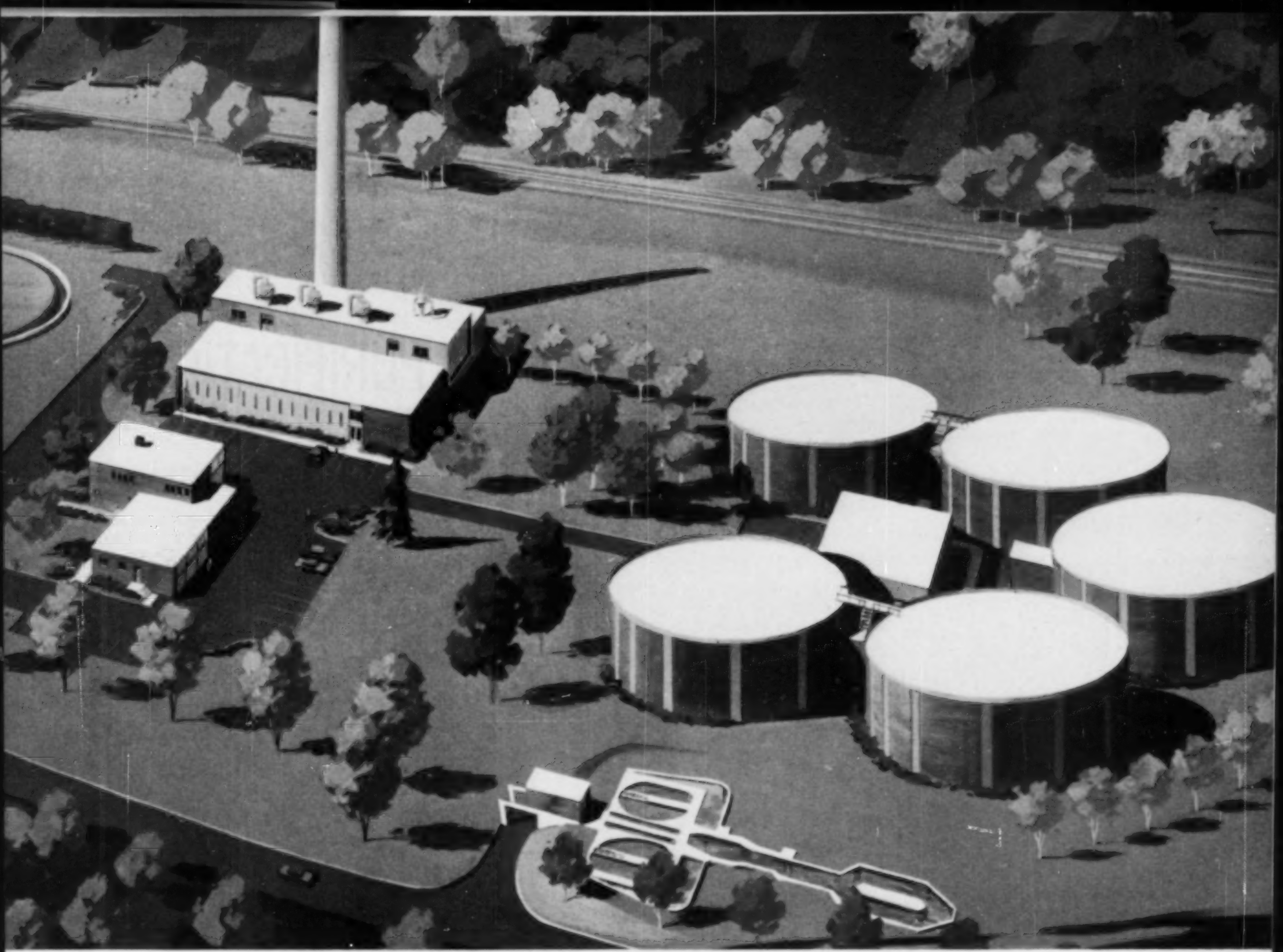
The City of Omaha recently ordered three C-E Raymond Incinerator Units for installation at its new Missouri River Sewage Treatment Plant now under construction. Henningson, Durham & Richardson are the Consulting Engineers.

This plant will serve an equivalent population of 2,000,000 and will have a dry weather flow of 70 mgd, and an influent capacity of 210 mgd. Treatment will be on a primary digested basis, but the C-E Raymond equipment is designed to incinerate either raw primary or digested primary sludge. The sludge will be burned to a sterile, clinker-free ash, but the plant will be equipped so that the solids from any one of the three C-E Raymond units can be dried for sale as a soil conditioner of low and uniform moisture content. This is the *only* system that permits both drying and incineration—separately or together—in any proportion.

This is the second Omaha plant for which C-E Raymond equipment has been chosen. The first plant, the 12-mgd Papillion Creek treatment plant, for which Henningson, Durham & Richardson were also consultants, has been in operation since 1959. This plant, containing a C-E Raymond Sludge Incinerator System proved the efficiency and economy of this equipment.

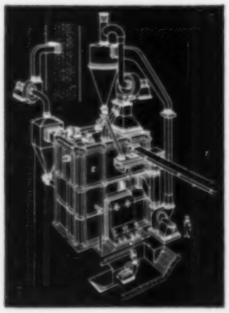
Our specialists will be glad to discuss with you or your consultants the many benefits this system can provide your community. For full information contact the C-E office nearest you.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS;



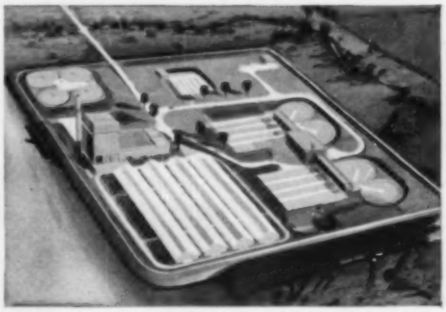
Hawkins-Tolboe-Harlin (a Joint Venture), Omaha, Nebraska, are General Contractors for Omaha's new $9-million Missouri River Sewage Treatment Plant, architects rendering of which is shown above.

treatment plant for Omaha
Drying and Incineration System



Right: Omaha's Papillion Creek treatment plant where C-E Raymond sludge disposal equipment has provided controlled drying, efficient incineration and excellent fly ash control since 1959. The Parsons Construction Company was the General Contractor.

Left: The C-E Raymond Flash Drying and Incinerator System provides maximum efficiency in processing filter cake — permits both drying and incineration, simultaneously or separately, in any proportion.

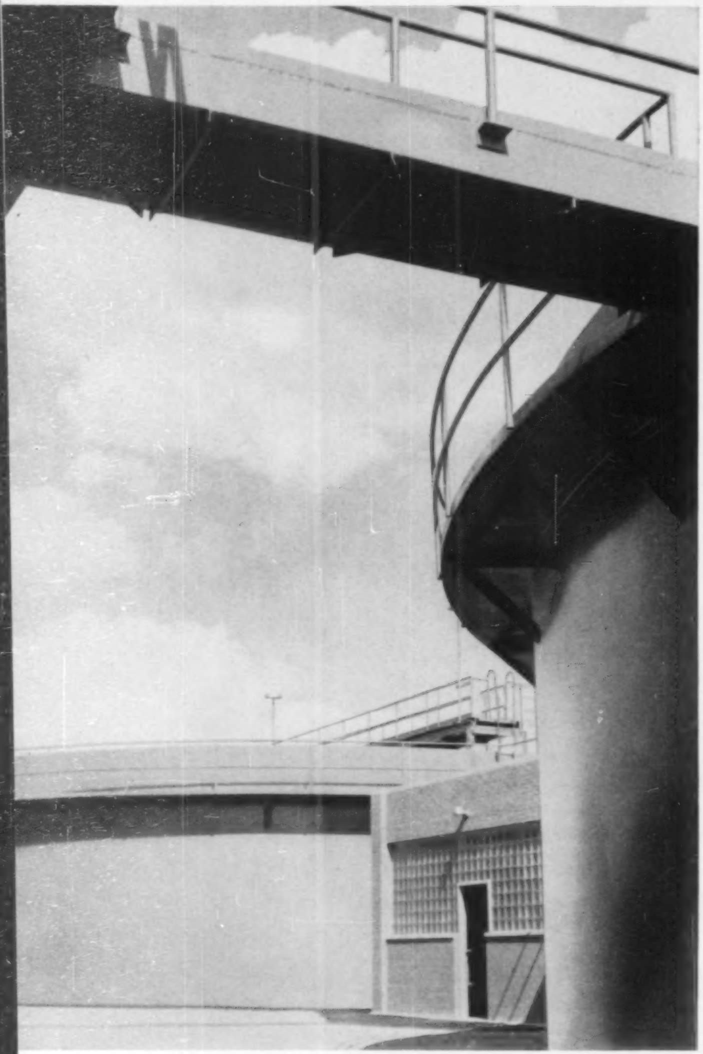


COMBUSTION C-E ENGINEERING
C-329

General Offices: Windsor, Conn.
New York Offices: 200 Madison Ave., New York 16 • Raymond Division: 427 West Randolph St., Chicago 6, Ill.
Canada: Combustion Engineering-Superheater Ltd. • Western Office: 615 So. Flower Street, Los Angeles 17, Cal.

PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE

Two of four purification units at Lexington, Kentucky—each 69′ 8″ dia x 17′ 9″ high —for American Water Works Service Co.



The projects pictured typify the long experience of PDM in serving dependably the waterworks field. The same care and skill in construction that have made PDM elevated steel tanks, standpipes and reservoirs the standard of value and performance wherever water is stored, apply equally to the long-lived steel structures PDM builds for modern water filtration and purification. ● When water handling is your problem, you'll find the best solution begins with a call to Pittsburgh-Des Moines!

PDM
ELEVATED STEEL TANKS

Pittsburgh-Des Moines Steel Company

Plants at PITTSBURGH, WARREN, BRISTOL, PA. • BALTIMORE • BIRMINGHAM • DES MOINES
PROVO, UTAH • CASPER, WYO. • SANTA CLARA, FRESNO, STOCKTON, CALIF.

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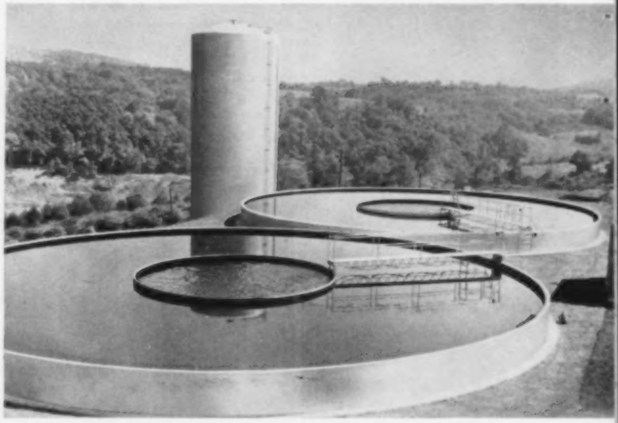
ATLANTA (5), 361 East Paces Ferry Rd., N. E.
DALLAS (1)...Suite 1703, Southland Center
DENVER (2).....323 Railway Exchange Bldg.
SEATTLE (1)...............500 Wall Street

CRAFTSMANSHIP AND PERFORMANCE IN STEEL WATER PURIFICATION AND FILTRATION FACILITIES BY PITTSBURGH-DES MOINES

Lexington, Kentucky installation with 200,000 gallon standpipe, 28′ dia x 45′ high



Two of four water treating units at Greensburg, Pennsylvania—each 84′ dia x 18′ high—and 300,000 gallon standpipe, 28′ dia x 65′ high, for Municipal Authority of Westmoreland County, Pennsylvania.

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 53.

Speeds Sewer Construction

721 Model 161 is a new trench backfill conveyor that allows simultaneous excavating, backfilling and pipe-laying. According to literature from KOLMAN MFG. CO., W. 12TH ST., SIOUX FALLS, S. D., which engineered and built it, Model 161 speeds sewer construction by as much as 300%.

Water Service, Fire Protection

722 *Form* No. 9057, published by the MUELLER CO., DECATUR, ILL., describes its methods and machines, distribution and water service products and its fire protection equipment.

Concrete-Asphalt Saw

723 Model SB-12 is well suited for "short run' cuts in concrete and asphalt required by municipalities, utilities. It uses 6 to 12-inch asphalt cutting blades, has water-feed attachment, weighs less than 200 pounds. Write EQUIPMENT DEVELOPMENT CO., INC., 2700 GARFIELD AVE., SILVER SPRINGS, MD.

Up-to-Date Refuse Collection

724 When you team a new HydroPaka, which can compress an average of 70 yards of refuse in a 28-yard body, with a leakproof TrashTainer, you'll find two men able to service between 800 and 1000 homes daily in residential pickups, reports MARION METAL PRODUCTS CO., MARION, OHIO. Bulletin available.

Fly and Mosquito Fighter

725 The FST-1 power duster handles dust and granules, has a 100-gallon stainless steel tank, high pressure piston-type pump, offers 360° turntable rotation. Its a new unit in the equipment line of BUFFALO TURBINE AGRICULTURAL EQUIPMENT CO., INC., 69 INDUSTRIAL ST., GOWANDA, N. Y.

Ground-Level Relamping

726 Detailed technical *Catalog* LM-1 describes a new luminaire lowering mechanism that permits ground level maintenance on street lights, area lights and flood lights. It's available on a wide range of P & K aluminum lighting standards. Write PFAFF & KENDALL, 84 FOUNDRY ST., NEWARK 5, N. J.

Sanitary Refuse Body

727 This powerful refuse compactor reduces garbage and refuse to a compact bale, features automatic cycling, ejects loads quickly through an endgate, provides watertight and sanitary refuse collection. The book, "The Big Squeeze," will inform you of all facts. Write HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO.

Snow Wings and Plows

728 OMAHA STEEL WORKS, 609 S. 48TH ST., OMAHA 6, NEBR., further increases the versatility of the 966 and 944 Cat wheel loaders with the development of in-cab controlled snow wings that push high banks of snow back or clear shoulders after a light snow fall. Write for literature.

Reduces Sweeping Costs 50% Per Gutter Mile

729 The 2-yard Model 40-A-W street sweeper flicks bricks, bottles, dirt, stones and debris directly into its hopper—no elevator, no conveyor. According to AUSTIN-WESTERN, CONSTRUCTION EQUIPMENT DIV., AURORA, ILL., this cuts per gutter mile sweeping costs in half. Literature provides details and other features.

Spill-Proof Waste Receptacle

730 Big feature of this waste receptacle is that its contents can't be scattered, accidentally or deliberately. For it has a door that locks and only a service man with key can open it. Available with either plastic or galvanized liner. Write BENNETT MFG. CO., ALDEN, N. Y., for descriptive catalog literature giving full details.

Accurately Feed Dry Chemicals

731 If your water filtration or sewage treatment plant requires accurate weigh feeding of chemicals, this catalog on diminishing batch weigh feeders, which feed materials in pounds per hour at any predetermined rate from 3 to 300 pounds per hour, will be of value. Write SYNTRON CO., 430 LEXINGTON AVE., HOMER CITY, PA.

New Citizen's Band Two-Way Radio

732 . . . for auxiliary police, fire and civil defense communications is designed for both headquarter and round-the-clock mobile use. It enables two-way conversation at ranges up to 25 miles over land. Write GLENN FOSTER, RAYTHEON CO., DISTRIBUTOR PRODUCTS DIV., 411 PROVIDENCE TURNPIKE, WESTWOOD, MASS.

Cuts a 25-Foot Swath

733 O. W. KROMER CO., 1120 EMERSON AVE. N., MINNEAPOLIS 11, MINN., designed the Wydemower for highway maintenance. Its three sickles are run by individual electric motors and each is raised by hydraulic power. The mower reportedly cuts three times as much as ordinary mowers used by highway departments.

products for the public good

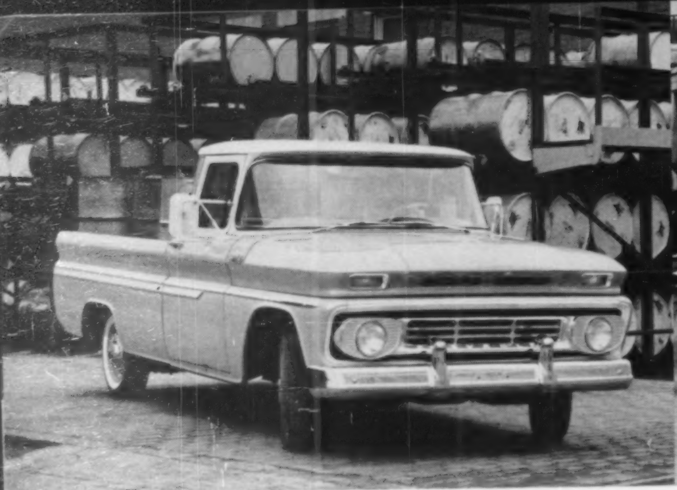
SINCE 1898

"THANKS FOR THE VOTING MACHINE

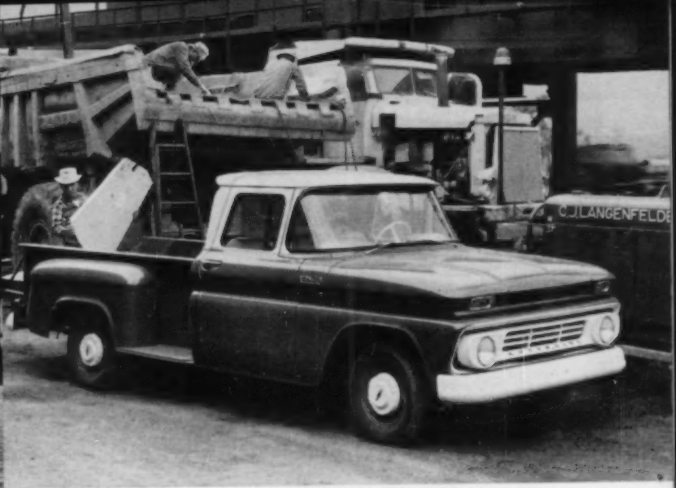
. . . We can all be thankful that voting machines were used in Knox County Tuesday . . . with the torrent of votes election boards would have faced a terrible task if the old paper ballots had been used . . . the counting would have dragged on through the night and until the early hours of Wednesday . . . A voter also has the assurance that his vote will be counted correctly when he votes by machine."

VINCENNES, INDIANA, "Sun-Commercial"—Nov. 8, 1960

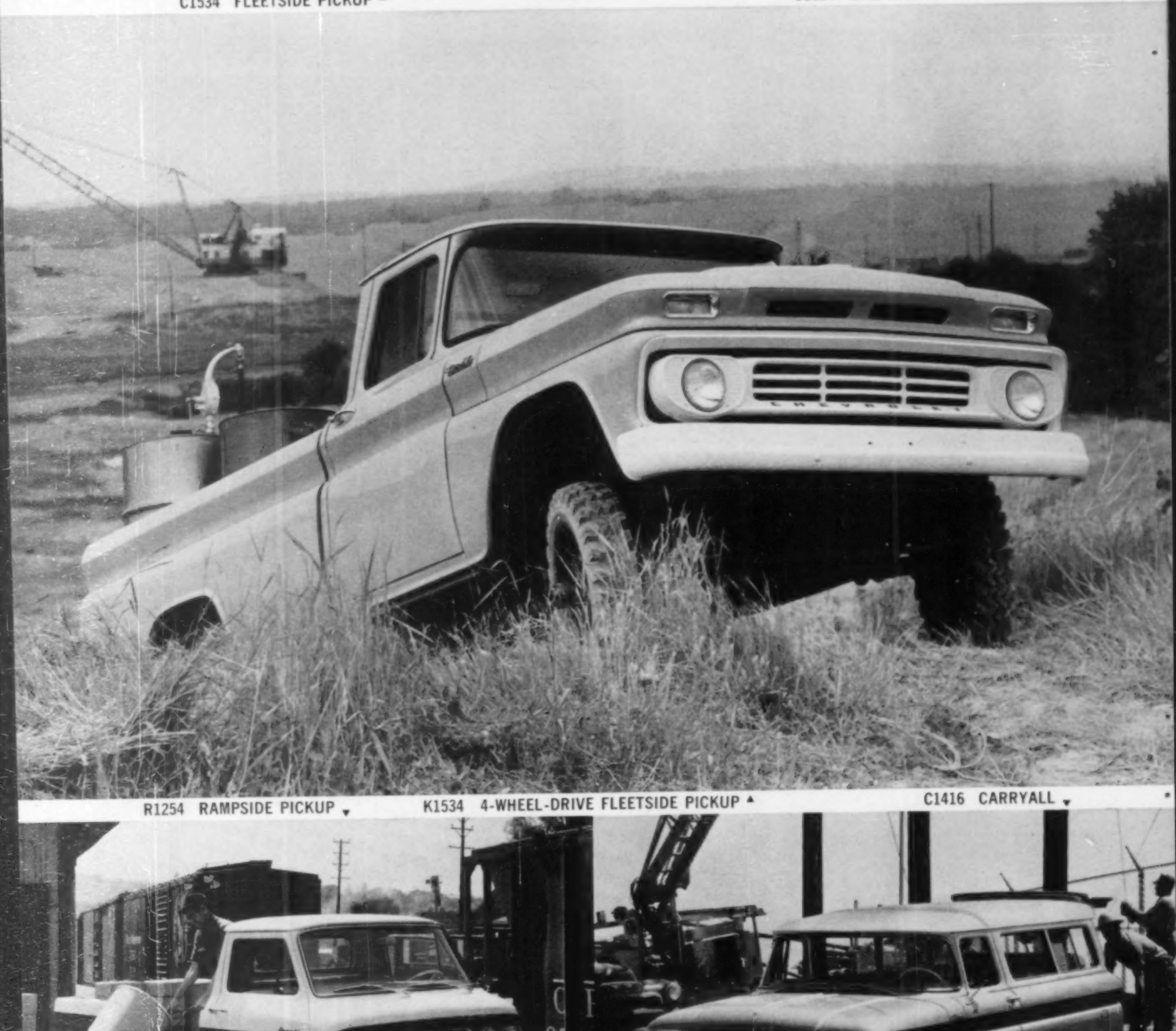
AUTOMATIC VOTING MACHINE
division of Rockwell Manufacturing Co.
Jamestown, N.Y.



C1534 FLEETSIDE PICKUP ▲

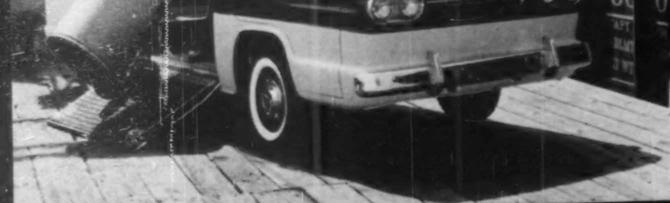

C.J.LANGENFELDE

C1504 STEPSIDE PICKUP ▲

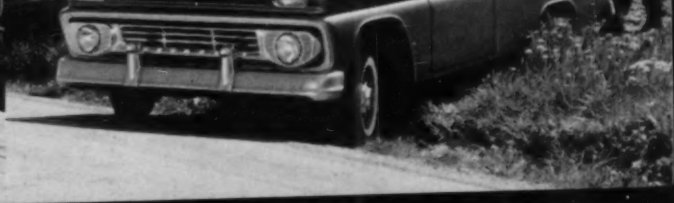


K1534 4-WHEEL-DRIVE FLEETSIDE PICKUP ▲

R1254 RAMPSIDE PICKUP ▼



C1416 CARRYALL ▼



FROM CHEVROLET'S NEW WORLD OF WORTH!

JOB-MATCHED CHEVROLET TRUCKS FOR '62

NEW POWER! NEW EYE APPEAL! CHEVIES FOR EVERY CHORE

From Chevrolet's broader-than-ever 1962 lineup of trucks for every kind of hauling job comes a full roster of better-than-ever light-duty models, specialists at trimming tough jobs down to size in short order. Here are new models and new power choices to meet a wider range of working needs, plus a trim new look for all conventional models that gives you safer seeing down the road! Now it's easier than ever to get Chevrolet's traditional thrift and dependability going for you, in the model tailor-made for your kind of job. There are work-loving pickups in a full range of sizes and weight ratings, in sleek Fleetside and handy Stepside styles, plus sensational Corvair 95 Rampside and Loadside models built to outwork anything in their class. In addition, there's the biggest choice ever of *choice* delivery models, including smart, fleet-stepping panels, high-capacity Step-Vans for every job up to 10,000 lbs. GVW, and the wonder-working Corvair 95 Corvan. For specialized requirements there are sturdy stake models and chassis-cabs in every size and weight class, rounding out a selection sure to include a better way to do *your* job! Why not see your nearby Chevrolet dealer for full details on the model made for you, and start finding out right away how much better business can be. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

NEW EASY-VIEW STYLING—For 1962, all conventional pickups, panels and Suburban Carryall models ride in with trim new look-ahead lines, featuring a new hood design sloping lower at the front to let you see the ground as much as 8½ feet closer. Safer, easier viewing results! Also, there's a handsome new grille, new custom exterior trim, and sparkling new colors. Inside, too, things are looking better for the man at the wheel, with new easy-to-live-with colors and tough good-looking upholstery.

NEW STEP-VAN 7—Here's good news—211 cubic feet of it!—for light-duty delivery operators with high-bulk lading problems. And Chevrolet's new Step-Van 7 is built to give your bulky loads a better ride, too, on the years-ahead Independent Front Suspension chassis design that's revolutionized the conventional truck field. With the big-saving High Torque 235 Six under the engine box, there's plenty of power to take your tightest schedules in stride, and a long list of better built body features adds up to easy work and extra-long working life.

NEW HIGH TORQUE POWER—New wider power choice for '62 lets you match your job needs better than ever, in all conventional pickup, panel and Carryall models. There's the standard-equipment 235 Six, cornerstone of the Chevrolet reputation for unbeatable operating economy, and the spirited, ultra-efficient 283 V8 for premium payload punch. *And now, in addition, the heavy-duty 261 Six is available at nominal extra cost, offering an extra measure of stamina and durability to keep on delivering in the roughest, toughest kind of duty.*

JOB-TESTED CORVAIR 95's—They've got a year of enthusiastic acceptance behind them and they're still the talk of light-duty trucking! Chevrolet's sensational Corvair 95 models, in two pickup styles and the spacious Corvan, have set new standards for space and weight utilization in the half-ton field. With a roomy driver compartment up forward and the compact, perky 145 Six tucked under the load floor at the rear, the space between goes to work in a way conventional designs can't match. And, to top it off, this new way to work comes in as pretty a package as ever came down the pike!

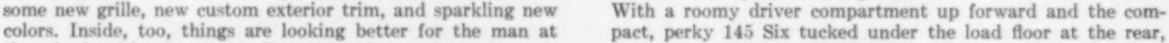
YOURS FOR THE ASKING . . . FREE INFORMATION

Use this convenient ordering coupon to get descriptive literature and specifications on new 1962 Chevrolet trucks to match your job. Just check what you would like, fill in your business address and mail to: Chevrolet Motor Division, P.O. Box 7271, Detroit 2, Michigan.

Please send:
1. Full-Line Brochure..... ☐
2. Corvair 95 Models...... ☐
3. Pickups & Light-Duty.. ☐
5. Suburban Carryalls.... ☐
6. 4-Wheel-Drive Models.. ☐
7. Medium- & Heavy-Duty Models............. ☐
8. Diesel-Powered Models. ☐
9. Tandem Axle Models... ☐

51

Name
Title
Company
Address
City Zone
County State



1962 CHEVROLET JOBMASTER TRUCKS CHEVROLET

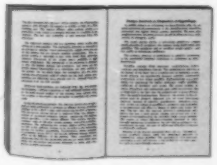
Does a fresh breeze turn foul in your town?

Quite possible! A fresh breeze may well pick up odors and health-harming vapors as it blows gently across the industrial areas of your city.

If citizens seem to be snooty . . . turn up their noses in public places, it's an indication of individual displeasure and a normal reaction to the foul fumes that may plague your community.

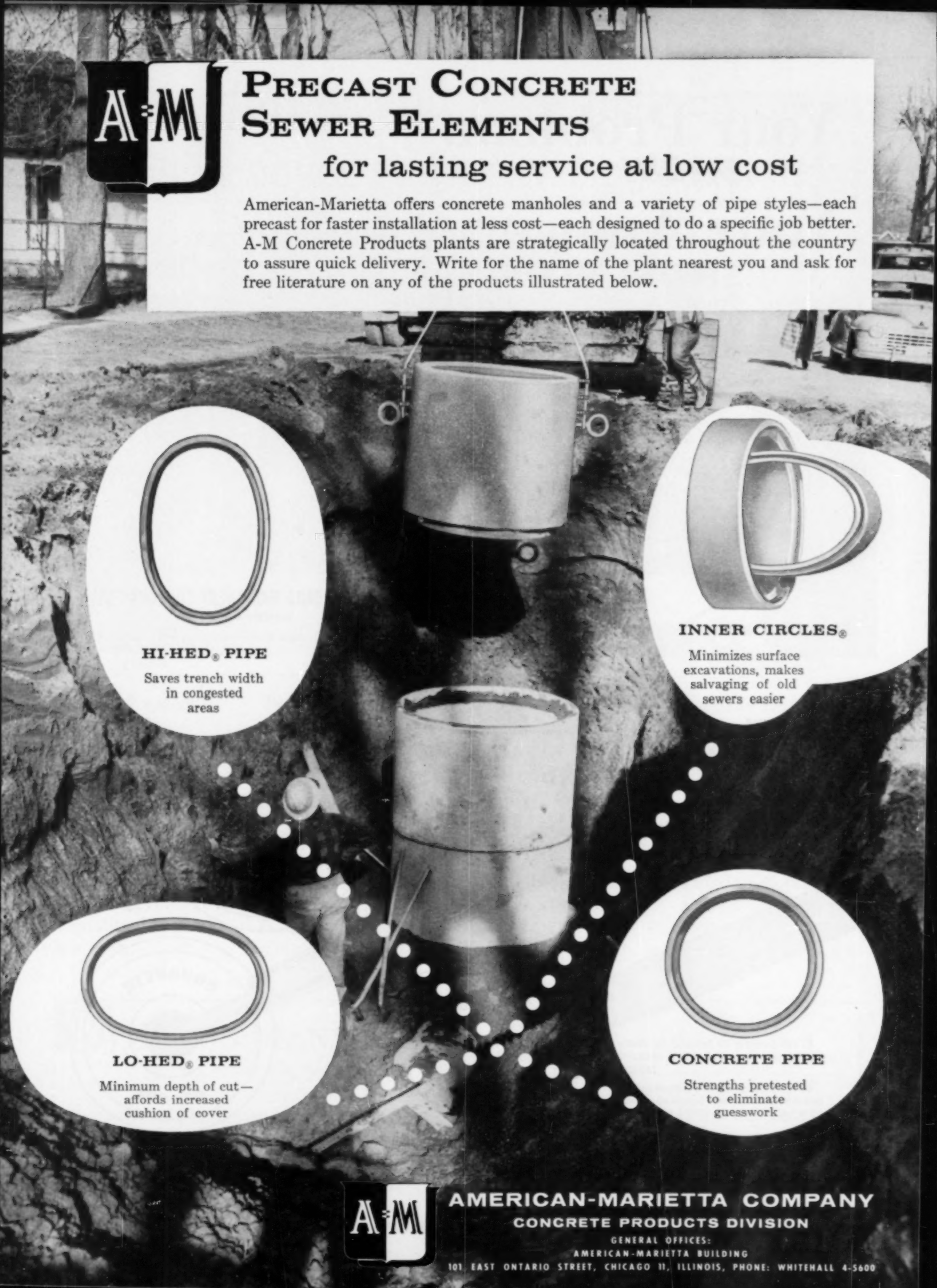
Very often industrialists don't realize that their plants are offenders. You may do them a favor by suggesting that they look into the problem . . . find out if they are contributing to the pollution of air in your town.

Suggest that they take action to correct air pollution at its source. They can easily and quickly determine how Catalytic Combustion systems work efficiently and economically in solving this serious and growing problem.



For information about the problem of industrial air pollution, a request will bring our new descriptive brochure. This brochure describes what industry in your area can do about air pollution. Write "Municipal Engineer, Department C."

CATALYTIC COMBUSTION CORPORATION
4725 Fourteenth Street • Detroit 8, Michigan
A SUBSIDIARY OF UNIVERSAL OIL PRODUCTS COMPANY



PRECAST CONCRETE SEWER ELEMENTS

for lasting service at low cost

American-Marietta offers concrete manholes and a variety of pipe styles—each precast for faster installation at less cost—each designed to do a specific job better. A-M Concrete Products plants are strategically located throughout the country to assure quick delivery. Write for the name of the plant nearest you and ask for free literature on any of the products illustrated below.

HI-HED® PIPE

Saves trench width in congested areas

INNER CIRCLES®

Minimizes surface excavations, makes salvaging of old sewers easier

LO-HED® PIPE

Minimum depth of cut—affords increased cushion of cover

CONCRETE PIPE

Strengths pretested to eliminate guesswork

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

Your Problem:
SNOW
Your Answer:
SNOW PLOWS
From
GOOD ROADS

Rugged snow-fighters.
A complete line of reversible and one-way plows. All styles and sizes. Write for full information.

Good Roads **GOOD ROADS MACHINERY CORPORATION**
MINERVA, OHIO
Manufacturers of Snow Plows, Road Spreaders, Leaf & Litter Equipment

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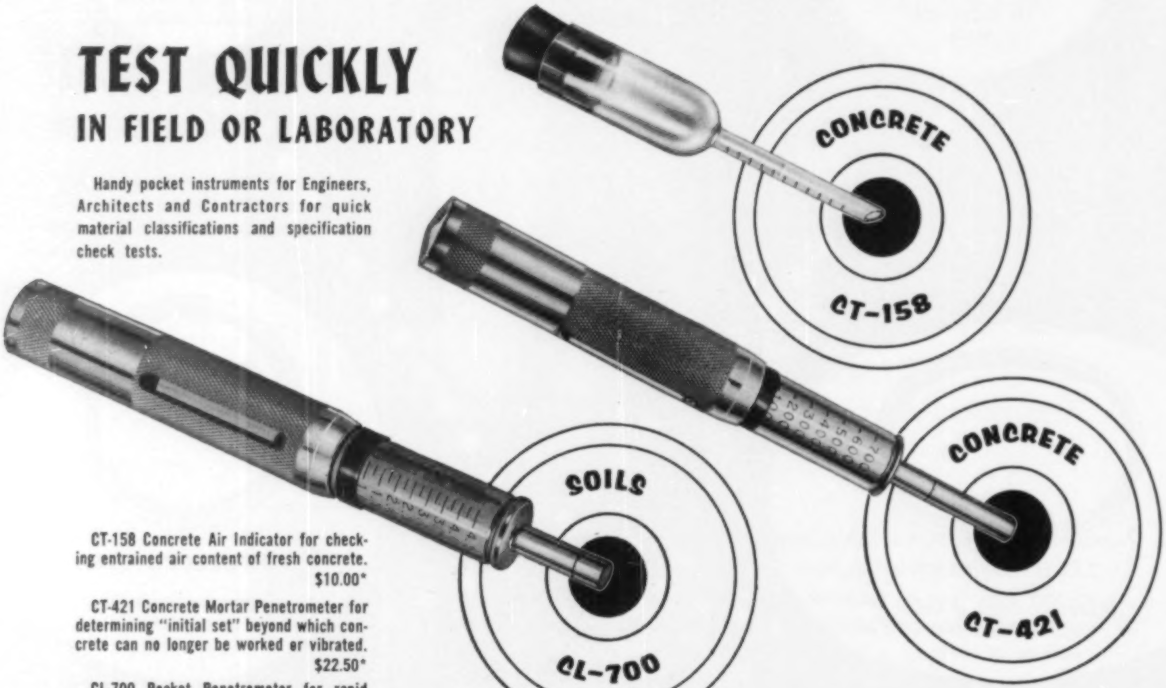
TEST QUICKLY
IN FIELD OR LABORATORY

Handy pocket instruments for Engineers, Architects and Contractors for quick material classifications and specification check tests.



CT-158 Concrete Air Indicator for checking entrained air content of fresh concrete. $10.00*

CT-421 Concrete Mortar Penetrometer for determining "initial set" beyond which concrete can no longer be worked or vibrated. $22.50*

CL-700 Pocket Penetrometer for rapid strength classification and checking degree of compaction of cohesive soils. $15.00*

*F.O.B. CHICAGO . . . IMMEDIATE DELIVERY

SOILTEST *Incorporated*
4711 W. NORTH AVENUE • CHICAGO 39, ILLINOIS • U.S.A.

Before, during, and after installation… Transite never stops saving you money!

…ON WATER MAIN JOBS

Transite® speeds any water line installation. Its long lengths are easily and quickly handled. The Ring-Tite® joint means a tight seal at every coupling in the line! The result: a quality job at low cost!

…ON SEWER MAIN JOBS

Transite speeds assembly, means a bigger day's return. And the J-M Ring-Tite joint is your assurance that the line will pass leakage or infiltration tests. You "button-up" the job faster when you use Transite Sewer Pipe.

…ON SUBSURFACE DRAINAGE JOBS

Transite Underdrain Pipe means savings wherever subsoils must be stabilized. This new perforated pipe means savings to contractors, for Transite's long lengths, fewer joints, low material cost all add up to more profitable jobs.

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Transite Ducts mean narrower, shallower trenches… crews attain faster laying. Transite comes in long 10′ lengths… joins quickly and securely with a J-M Plastic Coupling. Pneumatic rodding means additional savings!

JOHNS-MANVILLE PRODUCTS JM

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Box 362, AC-10, New York 16, N. Y.

☐ Please send, without obligation, Contractor's Kit of cost-saving facts with Transite Pipe.

TRANSITE—THE PIPE DESIGNED WITH THE CONTRACTOR IN MIND

NAME ____________________

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CITY ____________________ ZONE ________

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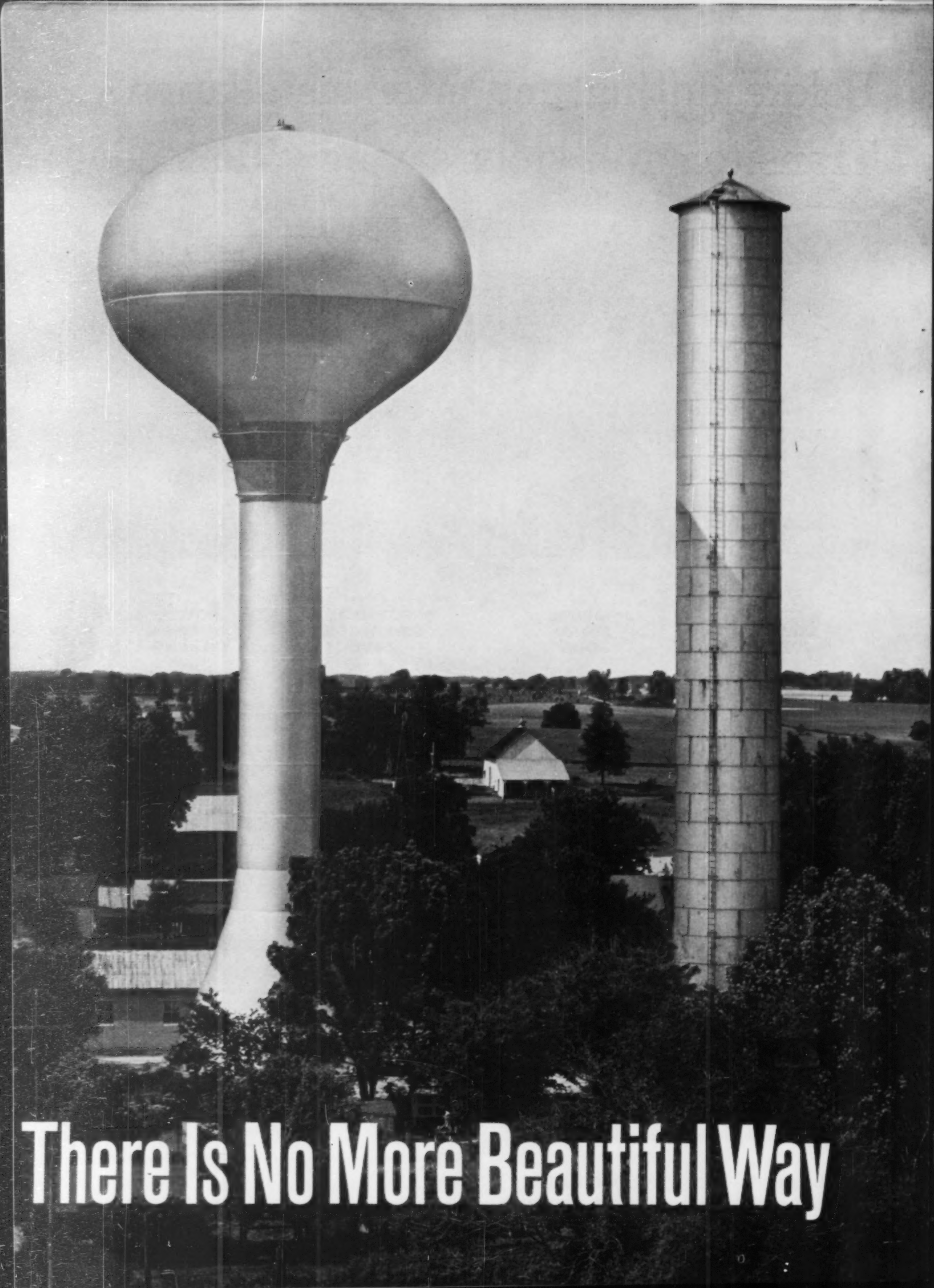


There Is No More Beautiful Way

Symbols of a Modern Community...

WATERSPHERES® AND WATERSPHEROIDS®

The remarkable advances in gravity pressure water storage are demonstrated by this dramatic photo showing a modern CB&I Waterspheroid and an old riveted standpipe.

When you modernize or add to your water storage facilities, consider the advantages of CB&I Waterspheres and Waterspheroids. Developments of CB&I's imaginative engineering in steel, they identify your community as a modern and progressive place to live. Ask for Bulletin A-40, "Modern Elevated Water Tanks."

Benefits of the Watersphere and Waterspheroid Design Include:

- Minimum ground area required
- Modernistic design to blend with landscaping and natural surroundings
- Utilization of base for pumping equipment or storage
- Elimination of external ladders
- Smooth surfaces from top to bottom reduce painting and maintenance costs

500,000 GALLON Waterspheroid, at left, has a head range of 37½ feet. The bottom capacity line is elevated 100 feet.

CB&I

Chicago Bridge & Iron Company
332 South Michigan Ave., Chicago 4, Ill
Offices and Subsidiaries Throughout the World

CB-6114

200,000 GALLON Watersphere, 37'8" in diameter, is elevated 98 feet to the bottom. Watersphere capacities range from 25,000 to 250,000 gallons.

500,000 GALLON Waterspheroid draws attention to a modern community. Waterspheroids have capacities from 200,000 to 500,000 gallons.

400,000 GALLON Waterspheroid, in the center of a new residential development, provides gravity water pressure for general service and fire protection.

To Identify A Modern Community

Be kind to taxpayers. Reinforce

Civic pride. Driving comfort. Taxpayer satisfaction. All are reasons for making sure that your urban redevelopment plans start with smooth, long-lasting streets. Take a tip from the concrete toll roads in service today: over 95% are reinforced with welded wire fabric.

It's good business to build streets that last. First, if Federal or State aid pays initial cost, maintenance costs are up to you. Second, tax dollars don't stretch very far if maintenance costs are excessive. Third, maintenance costs are high unless you reinforce your pavement the most economical way: with USS American Welded Wire Fabric.

USS American Welded Wire Fabric delivers the tensile strength needed to control cracks due to variations in temperature, moisture, soil shifting and traffic loads. It distributes balanced design that protects edges and corners. By actual measurement, welded wire fabric's ability to control cracks adds 30% to the strength of the slab.

USS American Welded Wire Fabric is precision-made of cold-drawn, 60,000 psi min. yield strength wire, sized to your exact requirements, ready for immediate placement. For full information, write American Steel and Wire, Dept. 1286, Rockefeller Building, Cleveland 13, Ohio.

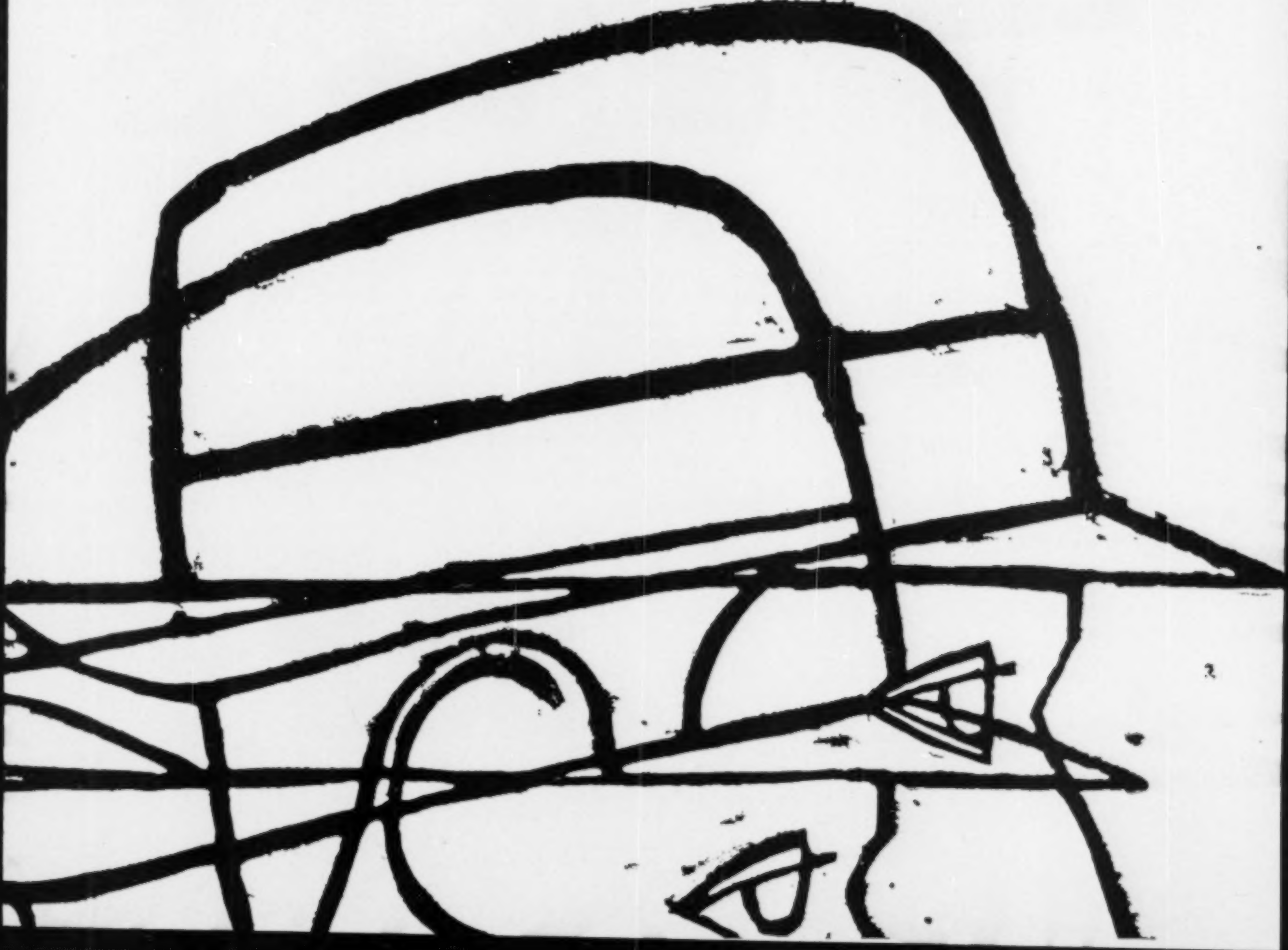
USS and American are registered trademarks **Innovators in Wire**

USS

American Steel and Wire
Division of
United States Steel

Columbia-Geneva Steel Division, San Francisco
Tennessee Coal and Iron Division, Fairfield, Ala.
United States Steel Export Company

America's new city streets with welded wire fabric.



When you open the water meter bids...

ADD UP THE TRUE TOTAL

BID PRICE

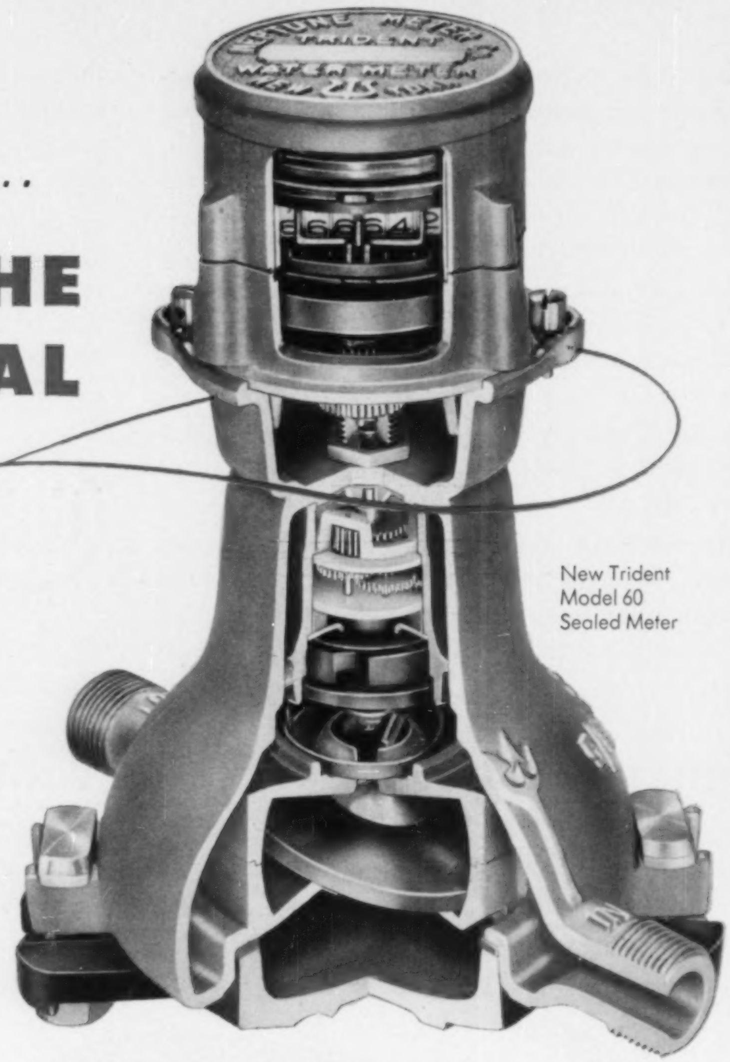
+

OTHER COSTS:

Revenue losses

Repairs

Obsolescence
(if any)



New Trident
Model 60
Sealed Meter

THEN make the best buy...

A water meter should be a lifetime purchase. Its price tag gives only *part* of its cost. Look instead for *true annual costs:*

First, think of revenue loss. A meter returns 12 to 20 times its price before its first check-up. A slight slip in accuracy loses more money than you "save" in a low bid.

Secondly, meters must be tested regularly. One that checks OK *without* repairs obviously is worth more. In the long run, the meter that is *easiest* to repair is also worth more.

Finally, with most meters you must add obsolescence. But not with Trident. A Trident constantly modernizes itself. All design improvements are made to fit older Tridents too; you get them *automatically* as you insert replacement parts.

Trident meters are designed not for low bid but for low true annual cost. That's why Trident is always your "best buy."

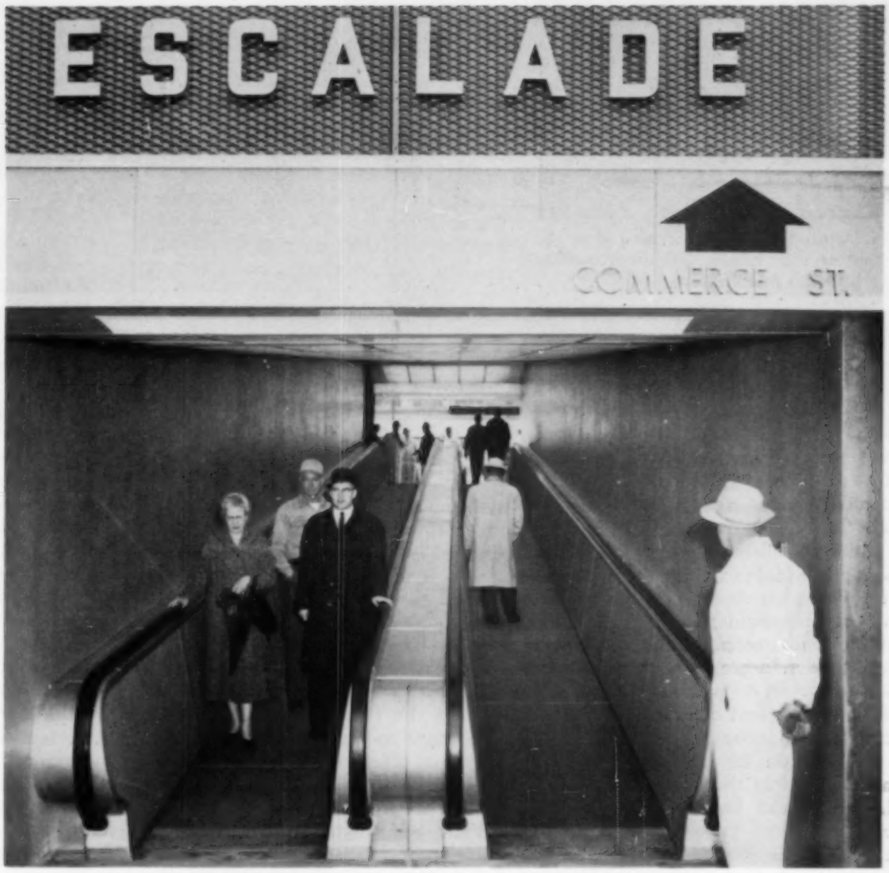
Ask your Neptune representative.

neptune
METER COMPANY

LIQUID METER DIVISION • 47-25 34th Street, Long Island City 1, N. Y.
OFFICES IN PRINCIPAL CITIES • In Canada: Neptune Meters Ltd., 1430 Lakeshore Rd., Toronto 14, Ont.

OCTOBER 1961

The American City



The new moving sidewalks take the arduous work out of walking the steep grades in Tacoma's downtown.

Tacoma, Wash., breaks through a topographic barrier to pedestrian circulation in its downtown area by building . . .

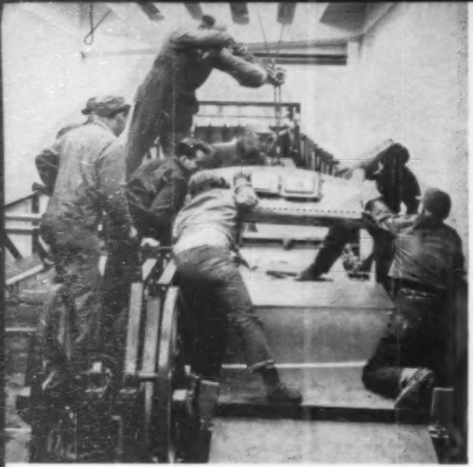
The First Municipally Operated Moving Sidewalk

By **DAVID R. ROWLANDS**
City Manager

Tacoma has two of four pairs of moving sidewalks now in operation. We expect two more to be in service before the end of the year. These escalades provide enclosed moving-belt pedestrian passageways that bisect the long, 625-foot blocks in this area and eliminate the need to climb the tiresome slopes between these streets. Thus we expect them to provide a stimulus to businesses near their locations by encouraging the free circulation of pedestrian traffic. Each individual moving-ramp unit is:

- **92 feet long**
- **53 inches wide, between handrails**
- **42 inches wide at the traveling belt set at a 12° angle of inclination (21% grade)**
- **able to travel at 90 feet per minute**
- **designed to carry 7,200 persons per hour**

The 42-inch special rubber belt, grooved for improved traction and drainage, allows pedestrians to travel two abreast. The belt rides on a stainless-steel slider plate and



A special vulcanizing machine joins the ends of the heavy, grooved, rubber belt, during installation.

is powered by a 30-hp motor in the up-grade direction, and a 15-hp motor on the down. Each pair of moving sidewalks will be housed in a single tunnel with the up-and-down walkways separated by the moving handrails, approximately 1½ feet apart.

Special safety devices insure the automatic stopping of the equipment if any foreign object becomes caught at the threshold plate or the ends of the moving handrails. To avoid too sudden a stop, there is a provision for an adjustable stop on the moving belt that can be varied from zero to 18 inches.

We placed the moving walks at approximately the center of double-length blocks to increase the free circulation of pedestrian traffic in the heart of downtown Tacoma. To insure that the public would use these moving walks, the Traffic Engineering Division of the Department of Public Works made a field survey, employing four interviewers and four count men for two days. The interviewers asked approximately 1,600 individuals about their preference for the moving-sidewalk plan, and also noted their origins and destinations. Those interviewed represented a total count of 10,700 pedestrians passing the interview station.

The results of the survey indicated that we could expect approximately a 40% increase in pedestrians adjacent to the mid-block location of the moving sidewalks, and therefore a substantial increase in potential customers for the businesses near these locations.

Our citizens always have had a transportation problem up and down the steep slopes which border the Bay. The central business district has developed from the shores of the Bay upward into steep terrain. At one time we had a cable-car system, similar to that still in use in San Francisco. However, increased cost and declining patronage forced it to go the way of most rail transit systems of this type.

Parking Problem

In recent years the parking problem has made it necessary for our citizens to leave their cars more and more in the fringe areas surrounding the central business district and once again walk the hills of our downtown area.

Four years ago, a Citizens' Committee for Tacoma's Future Development, comprised of over 250 people, appointed by the mayor and City Council, concluded that moving ramps which would carry pedestrian shoppers up and down the hills in the heart of the core area would be at least a partial solution to this most pressing problem. Tacoma voters apparently liked the idea as evidenced by the general-obligation bond election which they overwhelmingly approved.

Cost

The four pairs of moving sidewalks will cost a total of $875,000. This breaks down as follows:

• **Site acquisition**	**$350,000**
• **Demolition, where needed**	**50,000**
• **Escalation machinery**	**230,000**
• **Installation of tunnels**	**220,000**
• **Architect's fees**	**25,000**

The city recognized the high potential liability in the operation of these facilities. Accordingly, after receiving bids, we made detailed investigations, with primary emphasis on the safety to the traveling public. With this in mind, the city accepted the proposal of the Stephens-Adamson Mfg. Co., Aurora, Ill. The Montgomery Elevator Company of this city installed the equipment under a general contract held by Jardeen Brothers, also of Tacoma. Montgomery Elevator holds a maintenance and lubrication contract for one year to service the equipment, provided at a total cost of $156 per month. At the end of the year, city personnel will perform this service. Lea, Person and Richards, of Tacoma, were the architects. ◄◄

Erie's Parking Meters Are Attractive and Profitable

Erie in 1954, like most other cities throughout the nation, faced a gradual decline of its central business district with a resulting drop in sales. The merchants downtown devised a plan to preserve and stimulate the growth of the city and it included the decoration of parking meters.

The merchants purchased wrought-iron ornamental parking meter planters from Bartone's Welding and Ornamental Iron Works, 1228 East 26th St., Erie, Pa.. The cost of each planter and its installation was $23.

The installation of the planter is very simple. By removing the meter head, the planter will slip over the meter pole and then by simply tightening the set screws, the planter stays in place.

In the summer the planters are filled with flowering plants and in the winter time with fir-like shrubs which are decorated with Christmas lights at the holiday season. Recently, the merchants have had the meters and planters painted a light shade to complement the plants.

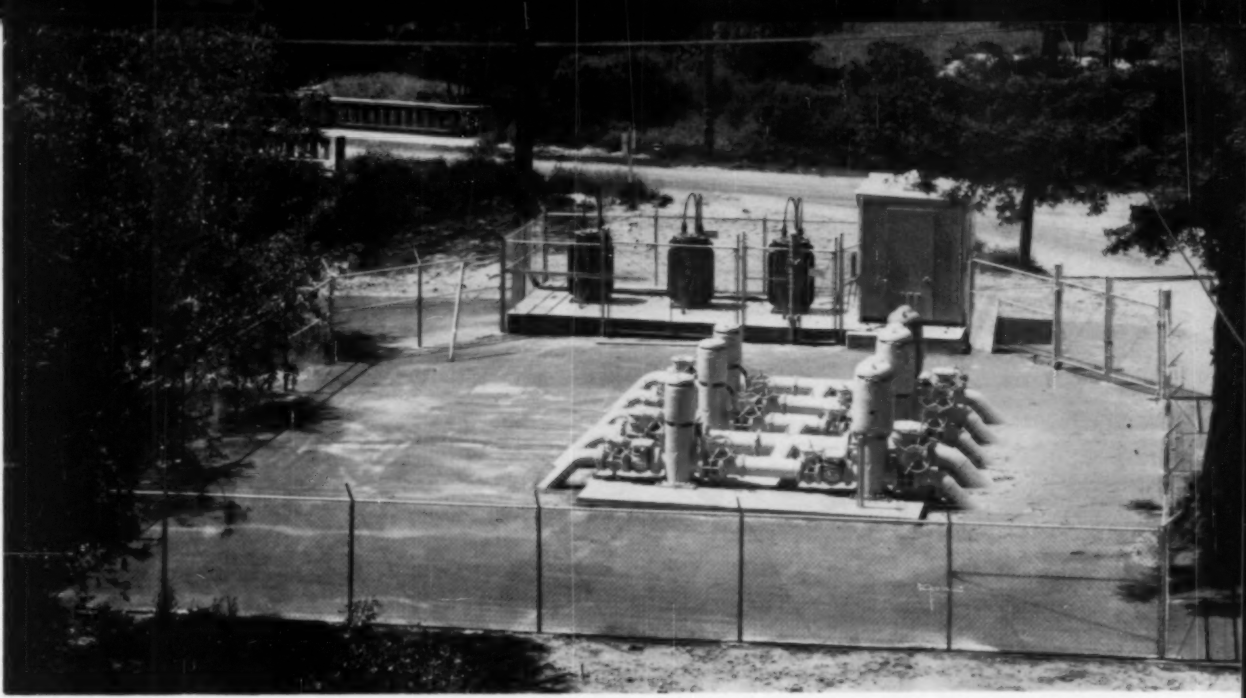
In the design of the installation, the tubs were made safe for public use and sturdy enough to withstand any damage by vandalism. A requirement also was not to interfere with the operation of the parking meter.

Maintenance

Not one cent has been paid by the city for maintenance. The merchants assume this responsibility plus that of changing the flowers or plants. Not one damage claim has been received for torn clothes or personal injury; only three have been damaged by cars in the six years of their operation and, in each of the three cases, the damage to the planters have been paid for by the operators of the vehicles.

Today there are slightly over 100 of these planters in downtown Erie and of particular significance is the fact that this installation has generated a considerable amount of interest and has increased business activity. Many people come downtown just to observe them, even from many outside communities. As one observer said, and it's a common remark, "It is certainly a delightful experience to walk or drive on a street that is lined with flowers."

ARTHUR J. GARDNER
Mayor
Erie, Pa.



The Felton Booster Station now has a capacity of 10 mgd but additional pumps will increase this to 17 mgd when the proposed Zayante reservoir is built.

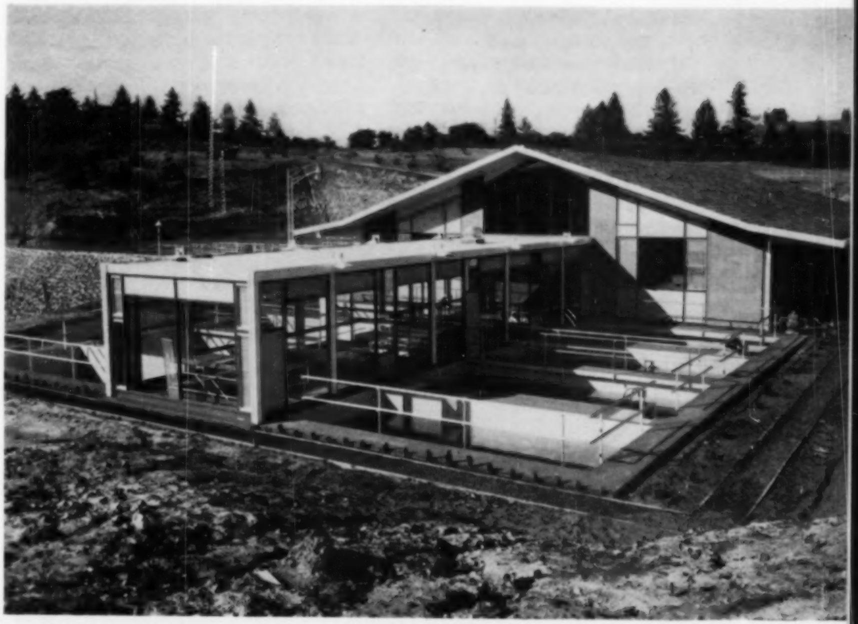
High-Rate Filters

. . . plus special sludge handling and a new reservoir solve Santa Cruz' water problems

By **WESTON L. WEBBER***

Santa Cruz County has sufficient water resources to satisfy its ultimate needs providing those resources are properly developed. Completion of the Newell Creek Project represents a big step in this direction and sets the stage for the continuance of this work. It adds the fourth, and makes provision for adding the fifth source of supply to serve our customers, now numbering about 12,700 service connections.

Prior to tapping Newell Creek, the city obtained water from three principal sources. Direct diversion from streams draining into the Pacific



Architecturally the plant blends well with the attractive ranch-type residential area.

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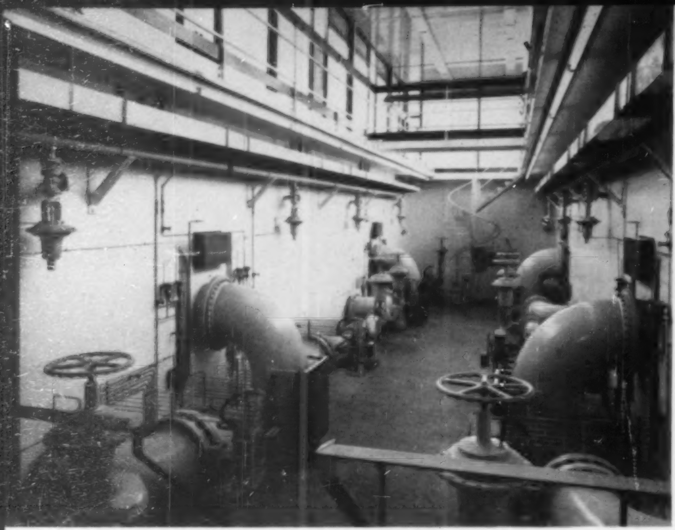
* Mr. Webber has served as director of the Santa Cruz Water Department for the past ten years, and his experience includes service with the National Park Service and California Water Company. He is a member of AWWA and was recently appointed to the Board of Governors of the California Municipal Utilities Association.



All parts of the filter-pipe gallery are open to view from the operating floor.

The operating floor is connected to the filter-pipe gallery by stairways at either end.

Ocean provided about 50% of the supply, with the balance coming from the San Lorenzo River, which bisects the city, and from three wells located within the city.

The Newell Creek Reservoir provides an additional 1.3 billion gallons each year and the new Graham Hill Road purification plant has a present capacity of 12 mgd and can readily be enlarged to 24 mgd.

The city's advisory Water Commission based its recommendation to the city council to construct the Newell Creek Project on three comprehensive studies: the first by the State Water Resources Board made in 1947, which was expanded upon by engineers engaged by the city with particular reference to water treatment and conveyance of water to the point of use, and finally a master plan for water development in the county made by engineers engaged by the Santa Cruz County Flood Control and Water Conservation District.

We estimate the total project costs, including incidentals and reserves, at $5,968,000. Departmental reserves accumulated from past years' income and interest earned on investments of idle bond funds make up the difference between the total cost and the bond issue.

Basis of Design

Graham Hill Road Water Treatment Plant

Flow	**Initial**	**Ultimate**
Design Rate, mgd	**12**	**24**
Maximum Rate, mgd	**18**	**36**
Flocculation Tanks		
Number	**4**	**8**
Detention Time, Minutes		
Design Rate	**45**	**45**
Maximum Rate	**30**	**30**
Volume per Tank, Cubic Feet	**12,500**	**12,500**
Sedimentation Basins		
Number	**2**	**4**
Detention Time, Minutes		
Design Rate	**240**	**240**
Maximum Rate	**160**	**160**
Volume per Basin, Cubic Feet	**133,000**	**133,000**
Surface Loading, Gals. per Day per Sq. Ft.		
Design Rate	**765**	**765**
Maximum Rate	**1,020**	**1,020**
Filters		
Number	**4**	**8**
Area per Filter, Square Feet	**700**	**700**
Filtration Rate, Gals. per Min. per Sq. Ft.		
Design Rate	**3.0**	**3.0**
Maximum Rate	**4.5**	**4.5**
Wash-Water Rate, Gals. per Min. per Sq. Ft.	**25**	**25**
Maximum Head Loss	**10**	**10**

Fourth Source

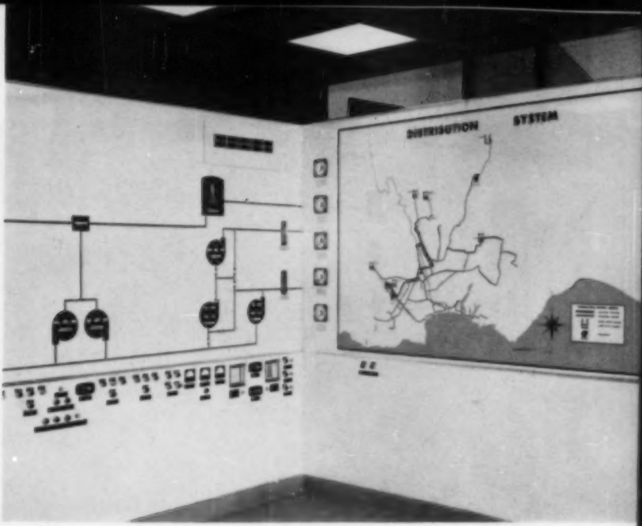
Newell Creek reservoir, located about ten miles north of the city, covers an area of 180 acres and has a storage capacity of 8,700 acre-feet. The dam has a crest length of approximately 700 feet and is 195 feet in height. The contractor obtained all material from the impervious core and pervious and random zones of the dam from within the reservoir area but imported the filter gravel and French drain material. The fill volume amounted to 1,285,000 cubic yards. Since the dam was reasonably close to a concrete batching plant, transit mixers delivered all concrete for the outlet conduit and spillway. The 36-inch-diameter outlet conduit connects the 22-inch supply main to the water-treatment plant.

The intake works consists of an inclined conduit on the upstream face of the dam with five inlet valves at different elevations. The hydraulic system, located in the control house at the top of the dam, controls the valves.

The city owns the watershed land on Newell Creek from a point about 1,000 feet below Newell Creek Dam to a point about 5,000 feet above the upper end of the reservoir and extending to the ridge line on either side. The land amounts to 2,600 acres and constitutes about one-half of the total acreage within the entire watershed above the dam. The land was purchased from the San Lorenzo Valley County Water District which had been holding it for reservoir

UPPLY
SYSTEM

The left wall of the three-walled control panel shows the supply system . . .


DISTRIBUTION SYSTEM

. . . while the right wall contains a map of the distribution system and storage facilities.

development. As a consideration in the purchase the city agreed to sell to the district up to 500 acre-feet of water per year.

A pipeline approximately ten miles in length conveys water from the reservoir to the treatment plant. It is constructed of American Concrete Cylinder pipe with rubber-gasketed joints and varies from 18 inches to 27 inches in diameter. All line valves are Rockwell-Nordstrom plug valves.

Water from the new reservoir must be boosted over a ridge situated in Henry Cowell Redwood State Park. The booster pumping station, an outdoor installation, consists of Worthington Wintroath turbine pumps with a design capacity of 10 mgd. This station operates against a varying head of 25 feet to 170 feet, depending upon the water level in Newell Creek reservoir, and the six pumps with 75-, 100- and 125-horsepower motors permit a range of flows between 3.0 mgd and 10 mgd. The Westinghouse motor control center is of the outdoor type. Operators at the Graham Hill Treatment Plant control the booster station pumps by means of telemetering controls utilizing a leased telephone circuit. Station design allows for the pumping to be received in the future from Zayante Creek reservoir. Design capacity of the main between the booster station and treatment plant is 17 mgd.

Better End Product

The treatment plant provides for coagulation, sedimentation and sand filtration of all sources of water utilized by the city. It also serves as a central operating headquarters for the water system. Telemetered information on distribution reservoir levels and booster pumping station operation recorded at the plant permit the plant operators to observe the operation of the entire system. This location also contains a booster pumping station which replaces an existing booster pumping station serving the area surrounding the water-treatment plant. Since the plant lies at a lower level than the ridge crossed by the supply main, the energy of this power drop will be utilized by means of a James Leffel turbine, to drive a pump of the booster pumping station.

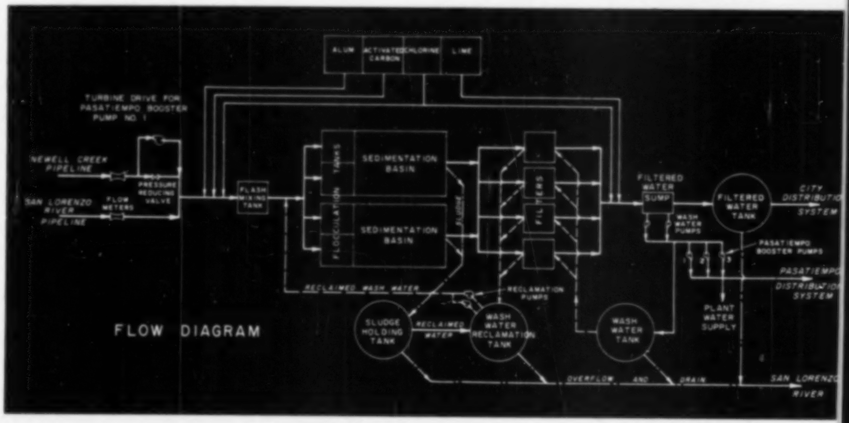
Storage

Plant facilities include the 1,000,000-gallon filtered-water storage tank, a 750,000-gallon reclaimed-water storage tank and a 750,000-gallon sludge storage tank. The tanks and the operating building are built for the ultimate-sized plant of 24 mgd. To expand the plant all that is necessary is to add more filters and sedimentation basins.

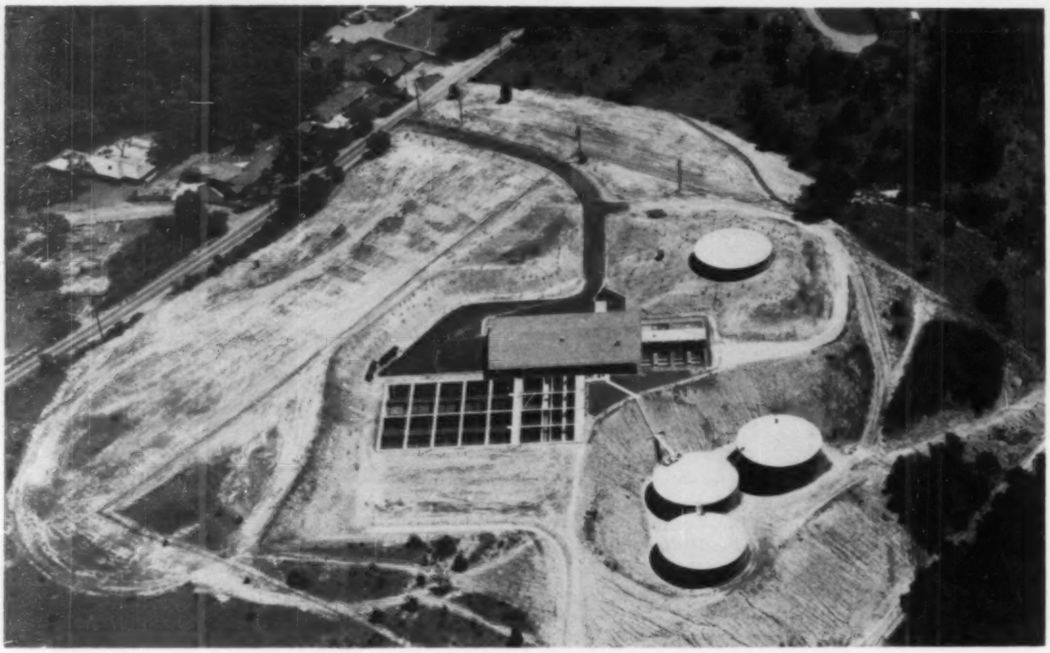
There are four flocculation tanks, two sedimentation basins and four filters. At the design rate of 12 mgd the detention time in the flocculation tanks is 45 minutes and in the sedimentation basins 240 minutes. The sedimentation basins, a design of Walker Process Equipment, will be cleaned by the use of fire hoses and the sludge will be stored in the sludge storage tanks for later disposal in the San Lorenzo River during high winter flows.

We use no sludge-thickening devices. Filter wash water, with the sludge removed from the filters, drains into the storage tank. The sludge settles and the supernatant liquid drains off into the river at a rate of 10 gpm. This we can do at any time provided we meet requirements of the Water Pollution Control Board with respect to turbidity.

We have not dumped sludge into the river to date. It is possible that fire hoses may be needed to break up the compacted sludge when it is dumped. We are also under certain restrictions of the Water Pollution Control Board in disposing of the sludge in that the river must have


ALUM
ACTIVATED CARBON
CHLORINE
LIME
TURBINE DRIVE FOR PASATIEMPO BOOSTER PUMP NO. 1
NEWELL CREEK PIPELINE
SAN LORENZO RIVER PIPELINE
FLOW METERS
PRESSURE REDUCING VALVE
FLASH MIXING TANK
FLOCCULATION TANKS
SEDIMENTATION BASIN
SEDIMENTATION BASIN
SLUDGE
FILTERS
FILTERED WATER SUMP
WASH WATER PUMPS
FILTERED WATER TANK
CITY DISTRIBUTIO SYSTEM
PASATIEMPO BOOSTER PUMPS
1
2
3
PASATIEMPO DISTRIBUTIO SYSTEM
PLANT WATER SUPPLY
RECLAIMED WASH WATER
RECLAMATION PUMPS
SLUDGE HOLDING TANK
RECLAIMED WATER
WASH WATER RECLAMATION TANK
WASH WATER TANK
OVERFLOW AND DRAIN
SAN LORENZO RIVER
FLOW DIAGRAM

Flow diagram of the water-treatment plant.



This aerial view shows the hillside setting of the plant; the tank standing by itself contains filter wash water while the tanks on the lower level are used for filtered-water storage, wash-water reclamation and sludge storage.

a certain rate of flow and the increase in turbidity must not exceed a certain percentage.

Our engineers designed the filters for a rate of three gallons per minute per square foot. Their reasons for this design rate, which is not uncommon in the West, included:

- **Cost savings in filter construction.**
- **The efficient sedimentation facilities ahead of filtration allows the high filter rate.**

The wash water tank has a capacity of 500,000 gallons and also serves as the sump for the booster pumping station. Water used for backwashing the filters collects in the reclamation tank from whence it is pumped to the Infilco flash mixer for recirculation through the plant. Basic equipment for this portion of the plant includes F. B. Leopold filter underdrains; Johnston wash water and reclamation pumps and DeLaval booster pumps to serve the area surrounding the plant. Chemical feed equipment consists of Builders Providence dry-chemical feeders for lime and carbon, Milton Roy pumps to feed liquid alum, and two 2,000-pound-a-day Wallace & Tiernan chlorinators.

The plant features a graphic control panel which depicts the source of supply system, the treatment-plant functions, and the distribution system. The instrumentation is pneumatic, by Minneapolis-Honeywell, including Foxboro, Bailey and Bristol Company instruments. Signals from the raw-water meter control the operations of the chemical feeding equipment and the depth of water in the sedimentation basin effluent channel controls the rate of flow through the filters. This control automatically adjusts for filter head loss to maintain a constant rate of flow through the filters. A high-water control on the filtered-water storage tank automatically shuts down the entire plant. The table on page 94 lists basic plant-design data for both the initial and the ultimate stages of construction.

Water Delivery

A 36-inch water main conveys treated water from the plant to the center of the distribution system and at that point connects to the principal feeder main from the city's main distribution reservoir. Delivery of water to the center of the distribution system will improve pressures and forestall, for a period of time, the necessity for construction of additional feeder mains to the easterly end of the water service area.

Plans call for converting the old water pumping plant on the San Lorenzo River at the north city limits in order to pump San Lorenzo River water from a new intake structure directly to the water-treatment plant through a 24-inch supply main. The 24-inch main as well as the 36-inch treated-water line is also constructed of American Concrete Cylinder pipe. Peerless submersible pumps will be installed in the intake structure. Booster pumps, consisting of the existing low-lift pumps from the old plant converted for this work, will be located in the old pumping plant to convey coastal water to the Graham Hill plant through this pipeline. Pump operation will be by remote control from the treatment plant.

Blyth & Co. of San Francisco acted as financial consultants with Orrick, Dahlquist, Herrington and Sutcliffe as bond counsel.

Brown and Caldwell of San Francisco designed the water-treatment plant, pipelines and pumping stations, and Creegan and D'Angelo of San Jose, Calif., served as engineers for the dam. All work was done under Peter Tedesco, City Manager of Santa Cruz. ◄◄

Phoenix motorized equipment varies from this fleet of Daybrook refuse packers . . .

. . . to this sky lift used by the park department to trim trees. The author is in the compartment at the end of the boom.

Equipment Works More Operates for Less

Phoenix, Ariz., boosts the work load on equipment and finds that operating costs drop; compact cars prove to be money savers

By **WENDELL ROTE,** Superintendent
Division of Mechanical Maintenance

A year ago last February, Phoenix owned and operated mechanical equipment totalling 1,103 units, or ten units per square mile of city area. Last February, the city had acquired 310 new units of mechanical equipment, but this meant only 7½ units per square mile of city area. The reason is that during that period, the city annexed 78.4 square miles, or about 70% of its previous service area.

Interestingly enough, during a seven-month period, operating costs of city vehicles decreased from 9 cents a mile, a year ago, to 7.2 cents at present. We can attribute this to a reduction in the average age of equipment, maintenance shop modernization, in-service training for employees, and a more extensive use of the so-called "compact" vehicles.

Phoenix has found that the compact vehicles cost less to purchase, less to operate, and less to maintain. The city had a total of 63 such vehicles in operation during the last half of 1960 and in February 1961 received delivery of an additional 82. Of these 145 compacts now in operation, 46 are Studebaker Lark eight-cylinder models used by the Police Department; 24 are Studebaker Lark six-cylinder models, 19 with air conditioning; 47 are Rambler Americans; and 28 are Ford Falcon pickup trucks. The police cars are equipped with automatic transmissions as well as air conditioners on an experimental basis.

Price Paid

The average price paid by the city for the compacts is $1,554, compared with an average price of $1,788 for standard models. The compacts averaged 21 miles per gallon for city operation, while standard models average 15 miles per gallon. Cost of operation, including parts, labor, tires, gasoline, and oil, have totaled 2.6 cents a mile for the compacts, and 4.6 cents for the standards. Moreover, the Division of Mechanical Maintenance reports that the compacts have less operating difficulty than the standard models. Although experience is not yet conclusive, Phoenix probably will continue to replace standard-model autos with the compacts if experience continues to be favorable.

The motorized equipment operated by the city is as varied as the area it must serve. The city now operates 944 motor vehicles and 469 pieces of heavy-duty and miscellaneous mechanical equipment. This includes 537 trucks, 350 passenger cars (145 assigned to the Police Department), 89 pieces of heavy-duty equipment, 29 motorcycles, 23 motor scooters, and five buses. In addition to these items there are 380 pieces of miscellaneous equipment, including stationary engines, trailers, pumps and sprayers.

The Division of Mehanical Maintenance is responsible for the repair and maintenance of all city equipment except Fire Department vehicles and office equipment.

The city now is in the process of making a comprehensive study on the use of decentralized service centers. These should reduce the overall operating cost to an even lower rate. We hope to place such a plan into operation. ◄◄

Sewage Treatment Geared to the Future

Milwaukee selects a sludge-disposal method suitable for the primary-treatment plant now under construction and for any type of secondary plant that may be selected

By **RAY D. LEARY***

The treatment and disposal techniques to be employed at the initial 60-mgd unit of Milwaukee's Puetz Road Sewage Treatment Plant represent a radical departure from the processes made famous at the Jones Island Plant. However, the change in no way repudiates the activated-sludge treatment process and conversion of the excess sludge solids into fertilizer. For 35 years the processing of excess sludge solids into a fertilizer, marketed under the now famous name of Milorganite, proved to be the most economical and suitable solids-disposal method for the Jones Island Plant. Studies indicate that this method will continue to be the most economical available at this plant in the foreseeable future. Thus the Jones Island Plant not only satisfactorily performed its required function in the past, but with few changes will meet the challenge of the future as well.

We based the selection of the treatment and disposal techniques for the new plant on the results of a comprehensive investigation of the future requirements for sewage collection and treatment in the Milwaukee metropolitan drainage area. Alvord, Burdick & Howson, engineering consultants of Chicago, Ill., conducted the investigation during the period from 1952 to 1959. This firm, engaged jointly by the Sewerage Commission of the City of Milwaukee and the Metropolitan Sewerage Commission of the County of Milwaukee, submitted their final report in 1959 in which they presented a program designed to meet the sanitary needs of the Milwaukee metropolitan area to the year 2000. The requirements for the first ten years of this period are of major proportions; and to obtain maximum benefits from the progressive expenditure of funds, which can only be made available at a certain rate if the increase in the tax rate is to be maintained within reasonable bounds, we must develop this program in an orderly manner and on the basis of "first things first."

We faced the immediate problem of reducing pollution in the rivers and in Lake Michigan as soon as and to the greatest extent possible. Milwaukee's three rivers, the Kinnickinnic, the Menomonee and the Milwaukee, presently receive considerable overflow from interceptors paralleling them and these interceptors are rapidly becoming more overloaded. The most practical solution consisted of the simultaneous construction of a new interceptor to relieve the present ones, and a new treatment plant to substantially eliminate the bacterial problem.

The time required to accomplish effective relief depended upon the combined cost of the new plant and interceptor, and the rate at which funds would become available for them. Of these factors, only the initial plant unit lent itself to an appreciable variation in cost. Obviously then, the magnitude of the capital investment required for plant construction determined the pollution-abatement date.

A review of the degree of treatment required at the Puetz Road site indicated that primary treatment, with provisions for adequate chlorination of the effluent and discharge of the effluent through a submerged outfall to a reasonable distance off shore, would provide satisfactory treatment for the present and immediate future. The long-range view indicates complete treatment will be required at this site in the future.

To arrive at the most suitable and economical long-term overall plant arrangement, we analyzed solids-disposal methods adequate for this site—present and future—in conjunction with the treatment processes under consideration. While the manufacture of Milorganite is admittedly satisfactory at the Jones Island Plant, we soon eliminated this process from consideration for the Puetz Road Plant.

Our consultants believe the location of the plant site is such that the waste solids, after thorough digestion, can be lagooned at the site without causing a nuisance. Without doubt, this solids-disposal method is the most suitable and most economical available for both the initial primary unit and the proposed future complete-treatment plant. The adoption of this method made it possible to select the sewage-treatment process based on its applicability, that is, without regard to the solids-disposal method.

In addition to relieving the flow of the present interceptors, the plant will treat sewage from a large area not now served on the north, west and south of the Metropolitan Sewerage District.

While we based the design of the facility on a complete activated-sludge plant having a capacity of 120 mgd, which we estimate will be adequate until the year 2000, the activated-sludge portion was included for illustrative purposes only.

Its inclusion should not be construed as a recommendation for its construction, for some other type of secondary treatment might be preferable when additional treatment becomes necessary.

Unusual Features

We designed the initial unit of the plant for 60 mgd from a tributary population of 300,000 people estimated to be reached by 1975 to 1980. This unit, although of the primary type, contains many features not heretofore incorporated in any similar plant.

The capacity of the intercepting sewer terminating at the plant is 500 cubic feet per second, or 320 mgd. We designed the primary treatment plant so that each part of the plant can handle this entire rate of flow hydraulically. Also, if necessary, the operator can take any individual plant unit out of service for maintenance and the balance of the plant will still handle the entire flow of the interceptor. This arrangement eliminates the necessity for a plant bypass and makes it physically impossible to send any untreated sewage to the lake.

While plant efficiency will be reduced during maximum flow, the liberal design for the rated plant capacity provides sufficient treatment, supplemented by chlorination, to avoid an objectionable discharge of unsettled sewage into the lake.

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* Mr. Leary is chief engineer and general manager of the Sewerage Commission of the City of Milwaukee, Wis., and a Subcommittee Chairman of the Local Arrangements Committee for the 1961 Water Pollution Control Federation Meeting to be held in Milwaukee October 8-12.

Pre-chlorination, controlled by an oxidation-reduction potential cell, takes place upstream from the plant. The design provides for post-chlorination facilities adequate to disinfect the entire capacity of the interceptor, 500 cfs. Effluent chlorination takes place at the entrance to the 132-inch-diameter submerged outfall which has a total length of 3,100 feet and which extends beyond the revetment wall for a distance of 1,800 feet into the lake. The four submerged diffuser outlets, approximately 25 feet below the surface of the water, are arranged as shown on the general plan. The effluent conduit provides a chlorine-contact period of 52 minutes at 60 mgd and 26 minutes at 120 mgd.

Chlorination

Chlorination facilities include equipment that automatically controls the chlorine-dosage rate both in accordance with sewage flow and sewage strength. The chlorine residual will be determined from a continuous sample of effluent pumped from the submerged outfall, a short distance downstream from the chlorine-contact point, to the residual analyzer via a detention tank, the tank being so equipped that the total detention period of the sample, from contact point to residual analyzer, can be regulated over the range of ten to 30 minutes.

The design also provides for four copper sampling lines to bring a continuous flow into the laboratory from four points: effluent as it enters the lake at the first diffuser outlet and samples of the lake water 600 feet north, east and south of the central discharge point.

This system provides for a continuous record of the quality of the effluent as it leaves the outfall and of the condition of the lake water over a wide area in the vicinity of the outfall discharge.

The degree of bacterial destruction accomplished by the entire treatment process can be determined from the effluent sample obtained at its lake discharge point.

Eventually, the record obtained from this source will be a vital factor in the determination of the basic chlorine-dosage rate needed to produce the required end results.

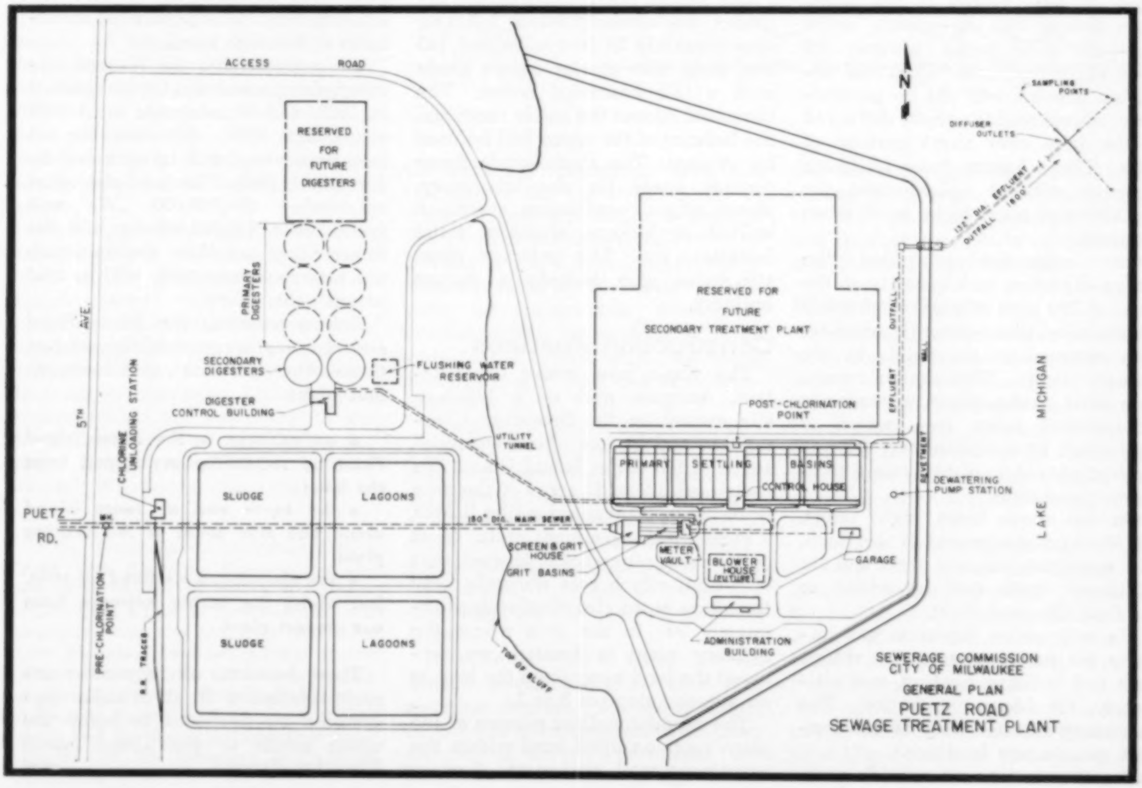
Sludge-handling facilities include both flow meters and radiation-density gauges in the sludge lines between the plant and the digesters to measure flow and control sludge pumping. A single, secondary readout instrument multiplies signals from the two primary elements to show the mass flow rate.

Several types of accelerated processes, as well as the conventional type, will be installed in the digesters to determine which type is best suited and most economical for the sludge produced at this plant.

Design Basis

The table on page 100 lists the basis of design of the various plant units, both for the primary-treatment plant, now under construction, and for the plant enlarged for complete treatment. Features include:

- **Mechanically cleaned course screens operating automatically on a loss-of-head basis;**
- **Power-operated dragline-cleaning equipment in the straight-flow-through-type grit basins;**
- **Grit washers that operate simultaneously with the dragline-cleaning equipment;**
- **Four 72-inch conduits, each equipped with a rate controller to conduct sewage from the grit chambers to the primary units. The controls distribute flow to one, two, three or four**


ACCESS ROAD
RESERVED FOR FUTURE DIGESTERS
PRIMARY DIGESTERS
SECONDARY DIGESTERS
FLUSHING WATER RESERVOIR
DIGESTER CONTROL BUILDING
UTILITY TUNNEL
5TH AVE.
CHLORINE UNLOADING STATION
SLUDGE
LAGOONS
SLUDGE
LAGOONS
PUETZ RD.
MH
180" DIA. MAIN SEWER
SCREEN & GRIT HOUSE
GRIT BASINS
PRE-CHLORINATION POINT
R.R. TRACKS
TOP OF BLUFF
N
SAMPLING POINTS
DIFFUSER OUTLETS
132" DIA. EFFLUENT OUTFALL 1800'
RESERVED FOR FUTURE SECONDARY TREATMENT PLANT
OUTFALL
EFFLUENT
REVETMENT WALL
POST-CHLORINATION POINT
PRIMARY SETTLING BASINS
CONTROL HOUSE
DEWATERING PUMP STATION
METER VAULT
BLOWER HOUSE (FUTURE)
GARAGE
ADMINISTRATION BUILDING
LAKE MICHIGAN
SEWERAGE COMMISSION
CITY OF MILWAUKEE
GENERAL PLAN
PUETZ ROAD
SEWAGE TREATMENT PLANT

Design Data

Puetz Road Sewage Treatment Plant

Item	Rates for 60-mgd primary plant	Rates for future 120-mgd activated-sludge plant
Coarse Screens Mechanically Cleaned	Four screens, each 5 ft. wide velocity @ 500 cfs = 3 ft./sec.	Four screens, each 5 ft. wide velocity @ 500 cfs = 3 ft./sec.
Screenings Grinders	Two Ray-Mo	Two Ray-Mo
Grit Basins—each channel 12 ft. wide x 115 ft. long	Four channels Velocity 0.5 to 1.0 fps	Four channels Velocity 0.5 to 1.0 fps
Grit Washers	Four units	Four units
Primary Basins Each 40 x 160 x 10 ft. deep	Four units 16 basins 600 gpd/ft.^{2} Detention 3 hrs.	Four units 16 basins 1200 gpd/ft.^{2} Detention 1.5 hrs.
Aeration Basins Each 30 x 370 x 15 ft. deep		24 basins 6 hrs. detention for rated capacity
Final Basins 125 ft. sq.		Eight basins—960 gpd/ft.^{2} Detention—1.9 hrs.
Digestion Tanks	Six primary, two secondary 2.2 cu. ft./capita of equivalent population	14 tanks 1.93 cu. ft./capita of equivalent population
Submerged Outfall	Detention of 60 mgd 52 minutes; at 500 cfs—10 minutes	Detention at 120 mgd—26 minutes; at 500 cfs—10 minutes
Sludge Lagoons	Four units 9,900,000 cu. ft.	Four units 9,900,000 cu. ft.

tank units, depending upon the volume flowing in the interceptor.

The overflow rate of 600 gallons per square foot per day at 60 mgd of the primary settling tanks provides for an excellent effluent at rated plant capacity. Even at the maximum flow of 500 cfs—mostly storm flow—the four tanks provide 0.6 hour detention time. Thus the resulting effluent will not be particularly objectionable when delivered to the lake over short periods of time. These basins have adequate capacity without enlargement for the 120-mgd plant to be built when required.

Our engineers computed the sludge-digestion tank capacity on the basis of 290 ppm of suspended solids for the rated plant capacity assuming 65% removal of the solids in the primary tanks. This design results in a total sludge-digestion capacity of 1,600,000 cubic feet, which is equivalent to approximately 2.2 cubic feet per capita of equivalent tributary population.

On the above basis, eight tanks, 110 feet in diameter and 21 feet deep, will serve the primary plant and six additional units will be added to the final 120-mgd plant.

We will utilize digestion gas initially for power generation, sludge tank and building heating, and ultimately, for blower operation. The secondary digester tank covers contain gas-storage facilities.

The sludge lagoons provide storage adequate for about a 20-year period without the removal of any sludge in that period. At the end of that time we can either clean the lagoons or construct additional storage space since space is available at the plant site.

The initial plant construction includes an administration building approximately 33 feet wide and 145 feet long, two stories above grade with a full basement below. The basement houses the boiler room and the balance of the space will be used for storage. The above-grade floors provide space for the laboratory, plant offices, conference rooms, a workshop, lockers, showers, toilet facilities, etc. The primary plant structures also include a garage building.

Construction Features

The plant, now under construction, occupies part of a 148-acre site owned by the Sewerage Commission and located about ten miles south of the Jones Island Plant. We reclaimed about 40 acres of the area from the lake by surrounding it with a steel-sheet revetment wall. Most of the remaining area is located west of a bluff which rose abruptly near the shore to an elevation of approximately 95. In the area where the primary plant is located, we terraced the land away from the lake at an average slope of 3 to 1.

The liquid-handling portion of the plant rests on filled land within the revetment wall enclosure. Sewage flows to and through the plant by gravity.

The sludge-digestion tanks and the sludge lagoons occupy high ground west of the lake.

Sand fill, constructed by placing the sand under water, supports the structures on the lower level, while existing clay soil supports the structures at the high level.

We estimate that the 60-mgd primary plant, scheduled for completion in 1963, will be adequate until 1975 or perhaps 1980. All contracts not now under way will be awarded by January 1, 1962. The total plant cost approaches $10,000,000. We will spend over $45,000,000 for all the intercepting and main sewers which are now and eventually will be tied in with this plant.

Before selecting the Puetz Road site our engineers carefully studied three other possible plant locations and plans:

- **an addition to the Jones Island Plant by reclaiming more land from the lake;**
- **the south end of Jones Island about one mile south of the existing plant;**
- **the abandoned Maitland air strip, just across the harbor entrance from our present plant.**

These locations all required complete treatment. In all of these suggestions we proposed to pump the waste solids to the Jones Island Plant for disposal. ◄◄

Bankrupt Principles of Urban Growth

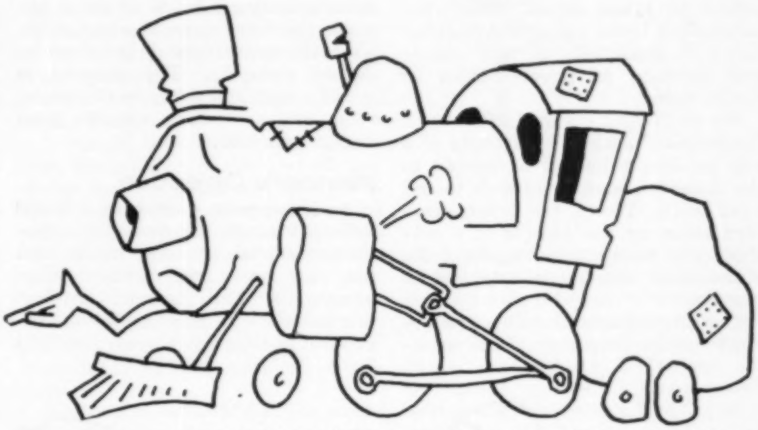
. . . that need liquidation and dynamic policies that need developing

By L. M. ORTON*

We have the difficult task today of examining urban America, as it travels forward at a tremendous pace, and measuring its growth through eyes not clouded by outworn perspectives of a quarter or a half century ago. To measure it against the strong, demanding standards of the '60s is stimulating, but hard work. While some principles of the past still are good, all too many others persistently remaining in use are bluntly bankrupt and deserve to be liquidated like any other bankrupt account.

For example, the idea that one municipal unit, whether large or small, can run its affairs without regard to neighboring units, or to the larger metropolitan area of which they are all parts, is one of the bankrupt ideas. It *must* be replaced by the dynamic but extremely difficult decision that selects those functions which can safely be handled locally, and those which require coordinated action among the various segments.

As an illustration, the thought that any one major type of public action, highway construction for example, can be conceived, planned, financed and executed out of context with all other elements of the urban-suburban structure, is an example of this bankrupt thinking.



A lack of policy has nearly bankrupted the railroad lines.

Rural Transportation

Rail transportation is another example of bankrupt thinking. We have been trying to live with a mess of competitive practices and subsidies in the transportation field that are self-defeating. This bankrupt policy—or lack of policy—has very nearly bankrupted the lines themselves.

Middle-income neglect is still another example. What sense does it make to sit with unconcern while middle-income families, the heart and sinew of a free democratic society, abandon the city in favor of the suburbs, and then heavily subsidize the extra highways and parking spaces which are necessary to get them back to town for their jobs, their shopping and their amusements? Who would argue that this is not bankrupt reasoning? Who can still ignore the inevitable result of traffic-clogged streets and deterioration of mass transportation?

What is the dynamic and utterly simple reverse of this trend? Obviously the construction of modern, middle-income housing on a large scale in the central city. We know that this can be done *and at a financial profit.*

I look to the future from the background of a young profession. When I started, there were no schools of city planning as such; no professional planning organization; no code of ethics for practitioners; no recognition in governmental organization of the planning function, no budgetary allocations for the over-all planning function.

Now we have all of these. No less than 29 colleges and universities give planning degrees. We see planning agencies in even the smallest of cities and towns across the nation. No longer does one have to argue with civil service groups that there is such a thing as a planner. The foundations for this planning profession were laid through the efforts of dedicated men in related professions.

Planning Roots

One such profession was architecture. Among its members loom the names of Daniel Burnham, Henry Wright, Clarence Stein, and George Ford, far-seeing, intellectual giants whose architectural skills visualized more than buildings for clients, but civilized urban areas for human beings.

Another was engineering. From it come the names of Nelson P. Lewis, Morris Knowles, Harland Bartholomew, Ernest Goodrich, and John Nolen, Jr., discerning enough to add structural strength as well as human dignity to cities.

A third, landscape architecture, counts such names as the Frederick Law Olmsteds, both father and son, Henry Hubbard, and James Sturges

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* Mr. Orton is Commissioner, New York City Planning Commission, and one of its charter members. His article draws from a talk he gave when he was presented with the Medal of Honor for City Planning, awarded jointly by the Metropolitan Section, American Society of Civil Engineers; New York Chapter, American Society of Landscape Architects; and the Brooklyn and New York chapters of the American Institute of Architects.

Pray, whose genius guides us in incorporating living beauty into our cities.

As the planning profession grew, a fourth group, the legal profession, began to lend its talents. Here we have the names of Edward M. Bassett, Alfred Beltman, Frank B. Williams, and Flavel Shurtleff, men who showed us how to make our cities dynamic and vital, and still stay within the laws.

The planning profession that has grown out of the combined efforts of men such as these has had to present guides for cities under changes that probably have never been equalled in the history of man. Early in the century, the waves of immigrants received here virtually all settled in urban areas. Later, the automobile freed our urban populations of limitations of time, space and distance as never before in world history.

We no longer planned cities to a "pedestrian" scale. The activity of a city no longer had to be geared to the distance a man could walk to and from work. Today, the urban complex takes on the aspects of a machine-age mechanism, requiring the coordinated development typical of our age.

The city planner operates in a peculiar professional way. Does someone summon him to a luxurious board room and say: "Good morning, Mr. Planner. We want a nice, modern city, medium size, right here on this map. It will accommodate so many, of such-and-such kind of people, will cost about so much and we expect to occupy it by this date." It happens that way once in 10,000 times—when a big industry wants a Kitimat. Incidentally, Kitimat has the weakness that all city planners fear—it is a one-industry city. Today Kitimat is suffering from this weakness.

Instead, the planner enters the urban study picture, more like this: a mayor or a council decides that it should "go in" for planning because some citizens' organizations have been hounding them to do so, or because there are some insistent problems too controversial for them to decide abruptly. The planner is given a desk and a key to the washroom and everybody expects great things from him.

Planner's Objective

As it happens, everybody expects different things. Moreover, the municipal official or body hiring him may not have any concrete ideas except that the planner's product and behavior be pleasing to the voters whose support is needed so that the current administration may continue in office—a not unimportant consideration, incidentally, in a democratic society of free people.

What does the planner do, under these circumstances? These are conditions that members of the four other professions that brought him into existence do not have to face. His responsibility is plain: Formulate an appropriate statement of requirements for the city's own development.

Of course, this means reports, charts, drawings, public meetings that frequently annoy the "doers" impatient to get on with their projects. But this statement of requirements is necessary.

Peculiar Roadblocks

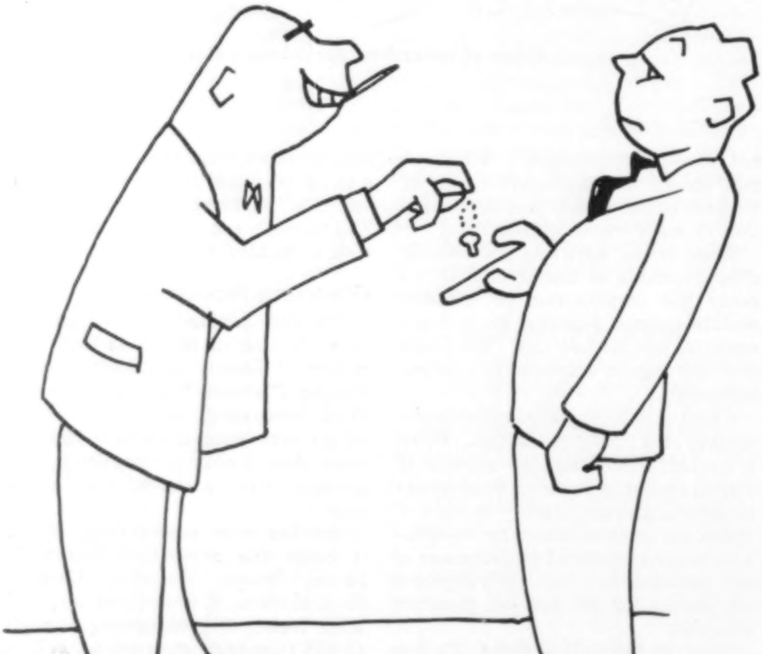
Unlike the architect, the planner has no choice of site. The city has its location, will not move, and will already be vastly cluttered with physical improvements, good, bad and indifferent. Unlike the engineer, he cannot just scrap it and demolish the whole existing mess. He has to preserve it, adapt it and develop it to new conditions. Unlike all four parent professions, he and his client cannot pick and choose the segment of the "market" they wish to attract. The planner's municipal client is beholden, literally, to *all* the people. This is as it should be. This also *is* his client and he must recognize it in precisely those terms.

However, the planner has many parallels with, for example, the architect. You can no more build a city intelligently without an idea of the number and kind of people it is to accommodate than you can design a building without an assumed capacity.

Difficult Questions

The planner, however, must find the answer to a set of rather interesting and certainly difficult questions. Under what conditions will people prefer to live near their work? or to live elsewhere, at what cost in time, money, and inconvenience? What elements of the population will wish to live in high-rise apartments? How many will sacrifice how much to live close to the ground? Only if he can find the answers can he establish an appropriate relationship between functions, services, and costs.

The statements of requirements are reasonably clear. They start with the land. They are expressed in terms of uses to which the land is to be put and of the intensity of those uses. Inherent in these determinations is what we will call, for lack of



As soon as the city planner has been given a desk and the key to the washroom everyone expects great things from him.

a better term, the *pattern* of the city structure.

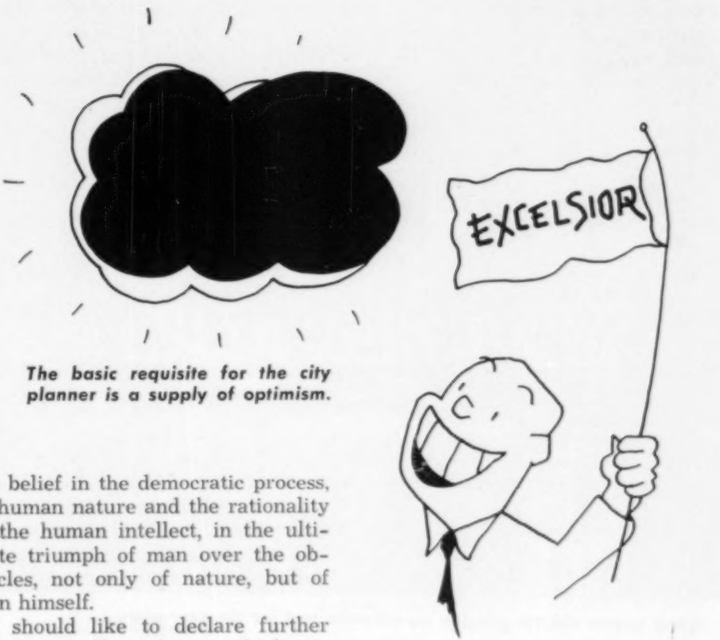
Will the city be built around one main center? Or will public policy tend toward decentralization, as British policy has tended? Or will it move toward recentralization in a number of lesser centers, as Thomas Adams advocated? Will industry and business mix with residences? Will they scatter among lesser centers or concentrate heavily? What recreation spaces will be within walking distance, and which will be elsewhere?

Following this reasoning, we prepared a master plan, as it is called in our New York City charter. Some don't like the term "master plan" which does sound fixed and somewhat arbitrary. For them, the same thing might be called the general plan. Under whatever name, the principle is the same. With such a plan, we can concentrate our efforts and resources on building an attractive, convenient and economical city.

Social Consciousness

We have reason to be encouraged. Today we see greater social consciousness than we did before World War II when the modern city planning profession was just coming into being. The public is gaining a broader and deeper understanding of urban problems, including interurban metropolitan difficulties.

I have always held that a basic requisite for the planner is a good supply of optimism, based on a genuine belief in the democratic process, in human nature and the rationality of the human intellect, in the ultimate triumph of man over the obstacles, not only of nature, but of man himself.



The basic requisite for the city planner is a supply of optimism.

I should like to declare further that the intellect of man, which can devise rockets which will surely find their way to the moon and perhaps other planets, which already has surpassed the ancient alchemist's dream of transforming base into precious matter, which is progressively eliminating the scourges of disease, can give his own physical surroundings some rational direction.

I refuse to believe that the automobile or any other man-made device will do us in. I am confident that man, given a decent interval of peace, can use the bounty of nature and his own intellect to create a city that provides decent homes for all, accessible to employment, to educational and cultural resources, and other facilities requisite to a good life and at the same time afford the same uplift for the human spirit as did the Acropolis and Chartres. ◄◄

New Downtown Coming to New Rochelle

Westchester Plaza is the first step in the New Rochelle, N. Y., program to rebuild nearly a square mile of outmoded downtown. It is planned to incorporate a main-line railroad station with express trains, major bus-terminal facilities and a garage believed to be the largest privately owned one in the country (4,300 cars with expansion possible to 6,000).

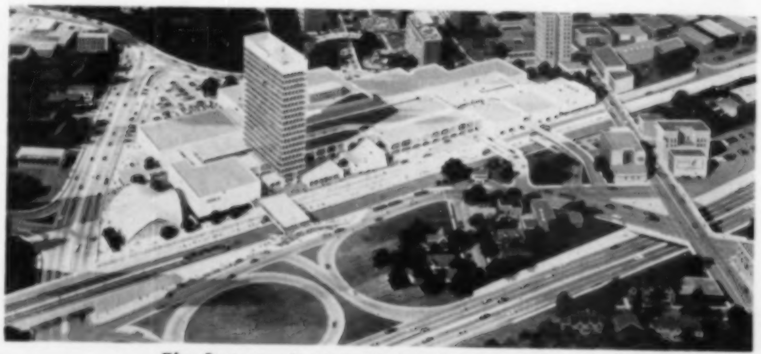
The Plaza is expected to draw 15,000 shoppers' cars daily according to Wilber Smith Associates.

The rail-car-bus solution for mass transportation has been described by New Rochelle's mayor, Stanley W. Church, as "the first time an American municipality has tackled and solved the problem underlying and causing urban decay."

The main, upper-level mall is to be an enclosed, 35-foot high, all-weather air-conditioned promenade. It will be studded with sculpture, fountains, pools and planting, and have natural daylight sky-lighting plus electric lighting. Its 40-foot-wide terrazzo promenade will be flanked by stores with open fronts allowing the public to wander in and out at will, a considerable impetus to impulse buying.

Its six-level design permits concentrating the entire complex of facilities on 18 acres of premium land instead of the one-level 70 acres—an area a mile long and 600 feet wide.

Two basic principles underlie Westchester Plaza's approach to retailing, customer convenience, and pleasurable shopping. Shoppers will always be under cover and in a controlled climate. ◄◄



The first step in New Rochelle's urban redevelopment program.

Early snows did not provide an ultimate test for the new plan.

We Learned from Experience

. . . that a snow emergency plan is only as strong as its weakest link

By **R. J. HOCKING***
Two Rivers, Wis.

A snow emergency plan must take into account all types of difficulties. If it does not, all previous efforts and proposals may break down as rapidly as the legendary "One Hoss Shay."

We prepared a plan and it was a good one as far as it went. It did not, however, include those almost inconceivable combinations of events which sometimes reinforce each other to provide rather complete breakdowns of communication and equipment. We learned a lesson and revised the instructions to include the things which should not happen —but often do.

Two Rivers (population 13,000) contains 45 miles of streets. We plow these in their entirety and, in addition, remove the snow completely from almost five miles. To accomplish these tasks, a crew of 24 men is available. The problem here is the same as in most other cities of comparable size: to keep the main routes open for traffic and to place the other streets in acceptable driving condition as soon as possible.

Preliminary Meeting

To create the proper organization of men and equipment requires intensive planning efforts. Such efforts, however, can only begin after everyone concerned understands the problem in all its aspects. To develop this understanding, we held a snow-removal seminar well ahead of the advent of cold weather.

Representatives of the Department of Public Works, the Department of Utilities, the Police Department, the Fire Department, and the Administrative Department attended the seminar. The city manager presided. The discussions delved into the basic issues of snow control. We reviewed and analyzed critically past practices to determine specific problem areas not solved by the previous operations. Everyone contributed tentative solutions and other suggestions which we discussed in an attempt to develop better snow and ice control.

By pooling the thoughts expressed by the various departmental representatives, we emerged with a truly comprehensive viewpoint. Department of Public Works officials became aware of the snow problems of other city departments. Such items as emergency fire and police lanes, street-clearing priorities and preventive maintenance were responsible for the majority of comments. As a result, several basic conclusions and recommendations emerged concerning snow-clearing operations.

Elements of the Plan

Using these recommendations and ideas, we developed a snow-removal and ice-control plan for Two Rivers. This plan included the correction of three types of conditions: ice, light snow and heavy snow with or without blizzard conditions. These are the important points of the plan:

- **The Emergency Call—describes the procedure to be followed when a storm hits, delegates the duties of fighting various weather conditions, and outlines the procedure for maintaining the alert with Weather Bureau information.**
- **Manpower and Equipment — describes the men and machinery to be used for ach weather condition as well**

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* Mr. Hocking assumed his present position of Director of Public Works in 1960, after serving as assistant to the village engineer and then administrative assistant for the Village of Brookfield, Ill.

The only city-owned motor patrol requires the aid of rental equipment.

A snow loader tackles a windrow of snow, loading it into rented trucks.

as manpower shifts in conjunction with vehicle assignments to specific geographic areas.

- **Priority of Work—lists specific priorities for each weather condition and for each section of the city.**
- **Method—lists specific instructions for certain types of plowing such as the clearing of intersections, plowing in tandem, and cleaning crosswalks.**
- **Communications — describes the use of the system of communications through the efforts of the central-garage clerk, the police radio and walkie-talkies.**
- **Garage — includes recommendations for the winter care of the equipment such as daily maintenance and washing after use.**

Using these procedures, we anticipated a smooth working and efficient operation, capable of clearing away the average snowfall within 24 hours. During the first 15 weeks of winter, Two Rivers experienced only two snowfalls which required plowing, one of four inches and the other, three. From the experience gained in these initial operations, we noted several results, which were substantial improvements over the previous years' operations. Significant among these was the quick and efficient clearing of those emergency lanes requested by the Fire and Police Departments during the seminar. The result was that emergency vehicles could, by using these lanes, reach all sections of the city during or immediately after a snowstorm.

Secondly, the new plan's equipment and manpower schedule distributed the experienced workers between two shifts in a more uniform manner. Each crew contained a nucleus of experienced snowfighters supplemented by temporary less-experienced men. The veterans provided the leadership and knowledge for the newer workers. By this method of spreading the experienced personnel, we produced two fully adequate crews, permitting around-the-clock snow removal and plowing activities.

Thirdly, the plan assigned the city mechanics to maintain a continuously operating repair garage.

Formerly, the mechanics drove trucks or operated equipment on the street. When trouble occurred, someone had to search for a mechanic and deliver him to the garage as well as replacing him on his vehicle. This practice caused several serious delays to the equipment-repair function and impeded the plowing oper-

The plan's goal: to have clear streets in the morning.

ations. The new schedule also removed the central-garage records clerk from his assigned plowing activity. He was now to remain in the office to coordinate activities and hire temporary men and equipment when stormy weather conditions warranted.

With the improved procedures, snow plowing and removal was more efficient and better coordinated. Since the miles of streets and volume of traffic on them have been increasing, the expanded snow-fighting capacity is of significant importance. The Department of Public Works has not expanded accordingly. Therefore, increased efficiency had to close the gap.

Our equipment, some of which dates back to 1947, includes eight Ford, Chevrolet, International and Oshkosh trucks, one of which mounts a Hiway salt spreader; one Barber Greene snow loader; one Caterpillar grader and one Hough front-end loader. Rented equipment includes four 10-yard Ford trucks, a 2¼-yard Hough loader and an Austin Western grader.

The third snowfall of the season revealed some discrepancies in the plan. In March a blizzard swirled out of the northwest and dropped seven inches of snow on the city. High winds accompanying the storm caused drifts which reached depths of three to four feet. Plowing, loading and hauling breakdowns more than doubled the length of time ordinarily required to plow the midtown area. The resultant shifting of personnel produced confusion and inefficiency when some men had to operate strange equipment in unfamiliar areas.

We attribute the causes for the breakdown in operational efficiency to an abnormal number of equipment failures and the attendant development of administrative confusion at the lower levels concerning manpower and equipment assignments. Obviously, a partial solution would consist of the replacement of worn-out equipment. Since breakdowns, in turn, caused much of the administrative confusion, new equipment should almost solve the problem. Our financial situation, however, prohibits any large-scale replacement program.

This experience taught a lesson which is applicable to officials in all fields of endeavor: a scheme should never overlook the possibility of something going wrong or a breakdown in the normal, expected conditions. Our experience illustrates the old maximum: "Whatever can go wrong, will."

Mother Nature taught us, the hard way, that our plan lacked provision for the realignment of equipment and personnel when breakdowns occurred. A schedule must assume that equipment will become inoperative, key employees will be unable to work and other abnormal conditions will occur. Ours did not include these conditions.

We have now added several supplements to the original plan which define secondary duties for personnel and equipment. These schemes anticipate breakdowns and personnel absences. They provide for the rental of additional equipment when mechanics cannot return the original to service immediately. Personnel assignments are more flexible, allowing supervisors to transfer men to various positions and areas with little time loss when conditions demand. This last provision required some additional training for operators so that they could improve their versatility and be ready to shift from one type of equipment to another.

Though the storm revealed some omissions in the plan, it also proved that what we had was good. We certainly will never again attempt to battle winter without a plan and we believe that the recent additions to the scheme will close the loopholes which formerly existed. ◄◄

Police-Car Purchasing Improved

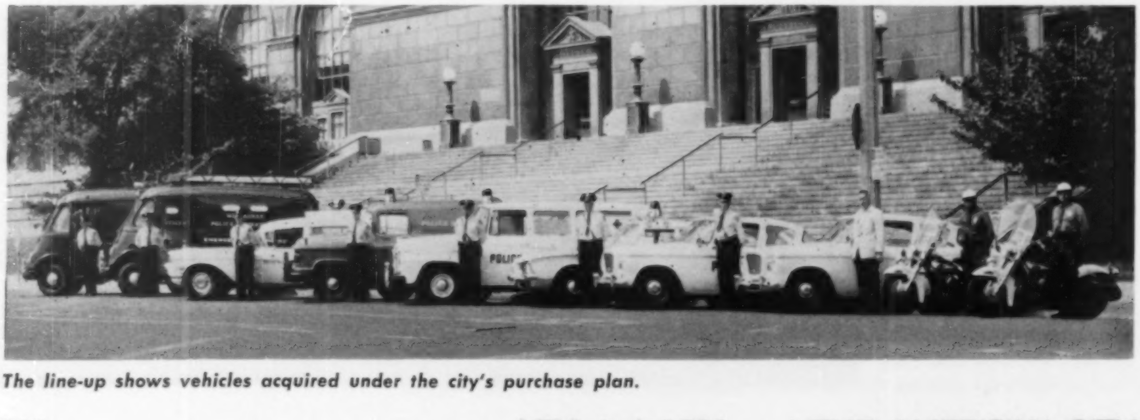
When in 1960 Milwaukee, for the first time, began purchasing police cars without trade-ins, it realized three distinct benefits. Under the new system a contract was awarded for 56 Lark VIII cars and 16 Ford station wagons scheduled for delivery in lots as required throughout the year.

Formerly the city waited until ten to 15 cars were needed, which meant that until bids were received and awards were made and delivery received, most of the cars were being extended in service beyond the economical replacement period. This resulted in "oppressive" maintenance costs and, added to this disadvantage, the cars were often out of service when needed.

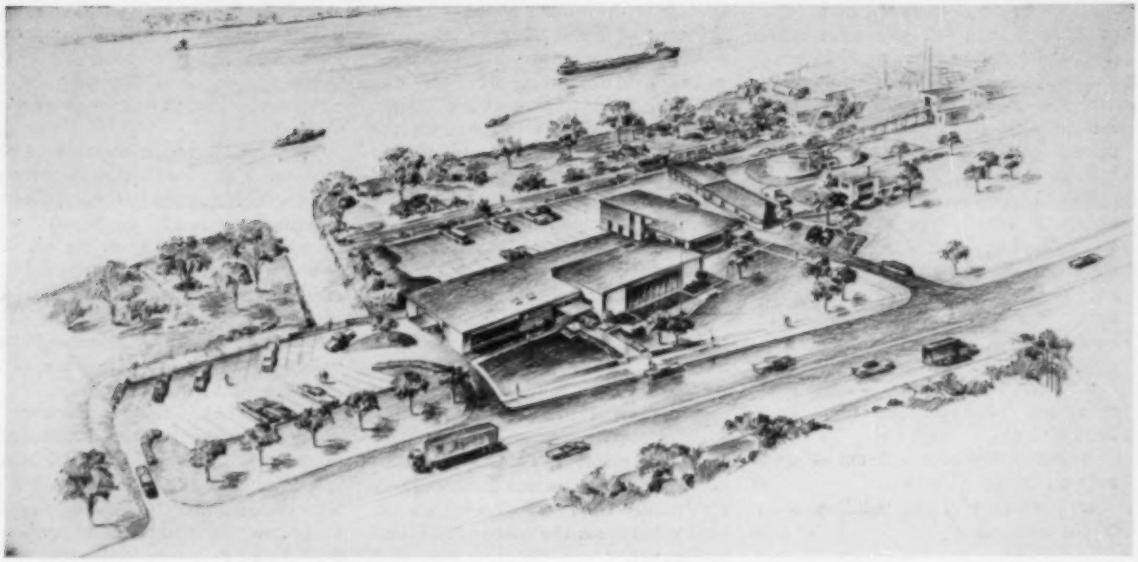
According to a report on the costs compiled by City Purchasing Agent Andrew L. Lehrbaummer, cars were acquired at a lower cost per unit without a trade-in than under the former system. The new system provided that the retired cars be sold on sealed bids as soon as the new car replacements were delivered.

Milwaukee reports that the new system benefits them three ways; lower acquisition cost per unit, reduced maintenance costs and a reduction of cars out of service.

This program was continued for the 1961 purchases and 49 Dodge Darts and eight Lark VIII's were purchased from the lowest bidders complying with the specifications. ◄



The line-up shows vehicles acquired under the city's purchase plan.



The Tonawanda municipal center contains the city hall, police headquarters, sewage-purification plant, incinerator and water-purification plant, all on one park-like river site.

The Air Conditioning Was Free

Tonawanda, N. Y., builds a new city hall with some extras in it at no extra cost

By **LLOYD F. KNIFFIN**
Consulting Engineer

The council chamber and court room has a ramped seating area, ceiling air diffusers, and glass-block wall.

When Tonawanda, N. Y., decided to build a city hall in the fall of 1958, it was prepared to pay $516,600, which was the engineer's estimated cost for a well-constructed building.

By timing the receipt of bids to coincide with a lull in the construction market and by issuing plans and specifications that were complete and carefully drawn, the city received low bids that totalled $487,284 for the structure, with an alternate proposal for an air-conditioning system of $29,403. The combined cost of the building and air-conditioning system thus amounted to $516,687, only $87 above the estimated cost for a building without air conditioning. This represented a construction cost of $17.75 per square foot of floor space, or $1.33 per cubic foot of building.

For 57 years, the administrative and judicial departments of the city had been performing their functions in rented offices. In the fall of 1958 the council requested an engineering estimate for a city hall and police headquarters based upon a floor area of 29,100 square feet. The engineer's estimate did not include site work, air conditioning, furniture or engineering architect's fee).

Site

Encouraged by this estimate, council contracted for the preparation of plans and specifications for a building on city-owned land overlooking the beautiful Niagara River. The site selected was filled ground over an abandoned section of the original Erie Canal. For this reason, the consultant decided to support the load on steel piles (103 H-piles # 10 BP 42, capacity 42.5 tons per pile) driven to rock 47 feet below grade.

Contractors bidding on the heating phase of the work were invited also to bid on an alternate proposal for an air-conditioning system. The low bid for this work came to $29,403.

Knowing that the cost of the **air-**

conditioning system would be at least doubled if installed at a later date, it was not difficult to sell the public and the council on the advisability of accepting the alternate. The air-conditioning equipment selected is produced by the Trane Company.

In air-conditioning a public building it is good practice to establish different zones for rooms having continuous use and those having intermittent use. Therefore, this building is divided into three zones, each being served by a separate piece of equipment:

a. Police Headquarters — continuous operation, 24 hours per day, seven days a week

b. Public Conference Room — open only on special occasions

c. Remainder of the building—open 8 a.m. to 5 p.m.

Another facility that has been well received by the public is a Mosler Safe drive-in teller's window for the payment of bills. This window has a two-way communication system and electric deposit receiver that enables the teller to project the deposit drawer towards the payee with the front of the drawer dropping 45° for easy access. This drawer is retracted by the mere touch of a switch. The whole facility has been installed in the south wall which is adjacent to the larger of two parking lots (these lots accommodate 64 cars).

The layout of offices is such as to completely isolate police functions from the remainder of the office area. Furthermore, it is possible to take a prisoner from the jail cells to the court room without going through a public corridor. Access to these police prisoner corridors is limited by electrically operated doors that are controlled from the office of the desk lieutenant.

The Court Room, which serves a dual function as Council Chamber and Court Room, utilizes glass-block panels with aluminum mullions flanked by limestone facing.

The seating area is sloped downward seven inches in 18 feet for better visibility.

The city's representative (who also acted as coordinator in arranging the office space for the different departments and agencies) was Perry A. Wilson, city engineer. Inspection work was performed by a clerk-of-the-works, employed by the city.

Architectural and engineering work was performed by the office of J. Fruchtbaum, Buffalo, N. Y.

Holler Bros., Tonawanda, was the general contractor; the plumbing work was done by John H. Knox Co., Buffalo. G. A. Dyce, also of Buffalo, installed the heating, ventilating and air-conditioning systems, and Fowler Electric Company, N. Tonawanda, was contractor on the electrical work. ◄◄

Philadelphia Raises Salaries

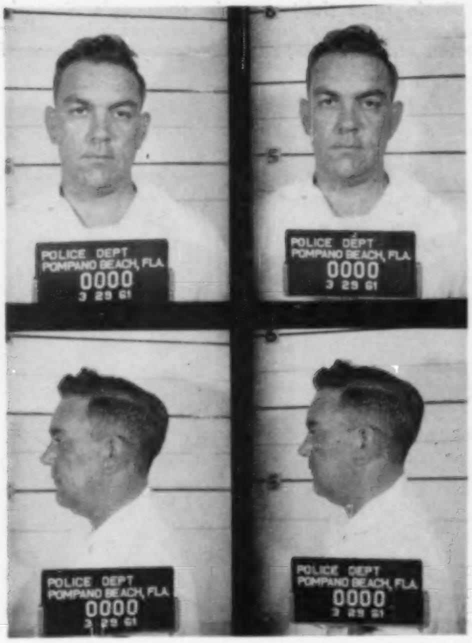
After a detailed study of salaries by the management firm, Worden and Risberg, Philadelphia has raised the pay scale of executives and administrators. The move has been designed to attract and keep highly qualified men in these positions. The new salary schedule raises total administrative and legislative salaries from $651,000 annually to $830,500 annually.

In the schedule below, the salary shown is gross and will be reduced by compensation or allowances from all other sources, such as school district, commissions, and maintenance —except for the health commissioner whose other compensation is added to the salary shown. The new salary scales, and the old, appear in the table below. ◄◄

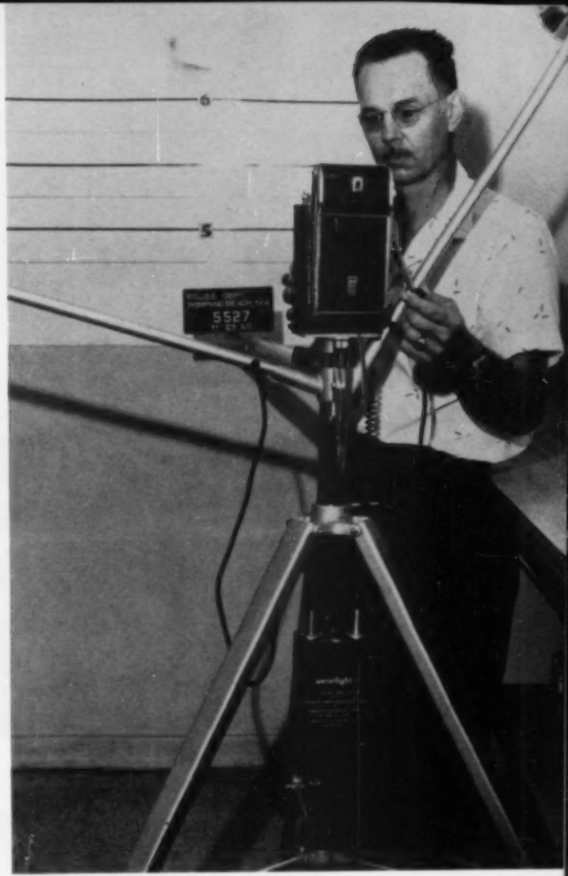
	Salaries	
	Old	**New**
Managing Director	**$21,500**	**$26,500**
Director of Finance	**19,500**	**26,500**
City Solicitor	**19,500**	**26,500**
Water Commissioner	**15,000**	**24,000**
Streets Commissioner	**15,000**	**24,000**
Welfare Commissioner	**15,000**	**22,000**
Health Commissioner	**20,000(e)**	**22,000**
Police Commissioner	**15,000**	**22,000**
Revenue Commissioner	**15,000 (c)**	**20,000 (c)**
Commissioner Licenses and Inspections	**15,000**	**20,000**
Recreation Commissioner	**15,000**	**20,000**
Commissioner of Public Property	**15,000**	**20,000**
City Representative	**18,000 (d)**	**20,000 (d)**
Director of Commerce	**18,000 (d)**	**20,000 (d)**
Executive Director of City Planning	**15,000**	**20,000**
City Controller	**15,000 (c)**	**20,000 (c)**
Fire Commissioner	**15,000**	**18,000**
Personnel Director	**15,000**	**18,000**
Superintendent of Prisons	**12,000 (b)**	**18,000 (b)**

	Salaries	
	Old	**New**
Director of Philadelphia Free Library	**18,000**	**18,000**
Commissioner of Procurement	**15,000**	**16,500**
Director of Fairmount Park	**14,000 (a)**	**16,500 (a)**
Clerk of Quarter Sessions Court	**15,000**	**16,500**
Superintendent of Riverview	**10,000 (b)**	**16,500 (b)**
Executive Director of Commissioner on Human Relations	**15,000**	**16,500**
Sheriff	**16,500**	**16,500**
Executive Director Board of Trade and Conventions	**15,000**	**16,500**
Register of Wills	**15,500 (c)**	**16,500 (c)**
City Treasurer	**15,000 (c)**	**16,500 (c)**
Commissioner of Records	**15,000**	**16,500**
President of Council	**15,000**	**20,000**
Councilmen (16)	**12,000**	**15,000**

(a) Some maintenance provided
(b) Full maintenance provided
(c) Some salary contributed by other agencies.
(d) Job combined under Charter.
(e) Salary from city $20,000, from other sources $6,000.



A single print provides for a group of four mug shots.



One heavy-duty tripod carries both camera and lights.

Polaroid Adaptation Cuts Costs for Criminal Mug Shots

Police of Pompano Beach, Fla., are saving personnel time, film and darkroom processing effort and are avoiding delay and re-takes by replacing their original photographic techniques with an inexpensive Polaroid set-up.

Previously Sergeant J. M. Coleman, in charge of the department's identification and records, used a miniature Graphic for a "mugging" camera. While it worked well, it involved him in many needless hours of darkroom work.

He abandoned it in favor of a Fairchild Polaroid ID camera with shifting back, a 3.5 Wollensak lens in an Alphax synchromatic shutter, with stereo tach in front of the lens. The stereo attachment provides two pictures, side by side, on one-half of the 3½ by 4½ Polaroid film, and the shifting back provides another exposure on the remaining half. Thus, with only two exposures, he has four pictures on a single piece of paper.

For criminal mug shots he makes one front and one profile view of each subject, thus getting one print with two views for the files.

For ID cards that are issued by the department to people engaged in certain types of employment for which such cards are required by ordinance, he now makes the cards with a picture attached while the subjects wait. This eliminates the former vexing problem of requiring people to make another trip back to pick up the cards.

If people apply two at a time, he uses only one piece of film for both subjects, thus making an appreciable saving in film costs.

Sergeant Coleman also points out that if untrained city personnel shoot the instant photos, and make a bad print, a repeat shot can be made in seconds. Previously, such mistakes were generally not discovered until development was completed in the police darkroom, at which time it was often too late to rectify the error or remake the photo.

Sergeant Coleman reports that the cost of operation with Polaroid compares favorably with the former conventional negative-positive technique; the quality is good, with the added advantage that the electronic flash used with the Polaroid, eliminates the squint formerly noted with the use of bright flood lamps.

With the city's present photographic rig, lights are provided by electronic flash units consisting of a Speedlight power pack, two flash tubes, reflectors and synched cable. Both lights and camera are mounted on a heavy-duty tripod forming a self-contained unit of great efficiency and easy mobility.

For making duplicate pictures of the Polaroid instant prints, the department inaugurated a copying system involving a Polaroid back for a 4x5 Graphic. With double extension bellows, Sergeant Coleman can turn out one-a-minute copies of mug shots with some degree of enlargement, when desired.

It is also possible to make an instant photo of a finger-print impression when law enforcement demands such in a hurry. ◄◄

Superintendent Mario Torre (left) uses the company's Motorola radio to present weekly safety talks to employees who gather around the foreman's truck (below) at the company's four disposal points.

Refuse Collection Safety Pays Off

. . . in higher morale, lower operating costs, and other service

By **BEN F. SNOOK***

"In case of accident, blame management." This seemingly harsh statement exemplifies the writer's approach when establishing safe-driving campaigns; and it played an important role in the Seattle Disposal Company's accident-prevention program. Since the start of the program in June 1957, the company, which collects refuse under contract with the City of Seattle, Wash., reduced accident claims by 37%. Losses ran around $32,000 a year and more, and David Sprague, of the insurance brokerage firm, Sprague & Israel, was ready to give up when he decided to initiate a safe-driving campaign, enlisted the support of the disposal company and called in the writer.

Management support is essential. Management must not only approve and maintain the program, but follow a rigid routine including preventive maintenance in the vehicle-repair shop and a training program that will assure only professional drivers at the wheels of the trucks.

Management, insurance people, the police department and all employees participated in the accident-prevention program that was launched by calling the employees together and explaining it step by step. The program included:

- **A driver-attitude check list to reveal his attitude toward traffic regulations, courtesy on the road, safety mindedness and similar items.**
- **Driver employment application, which reveals the driver's accident and employment record.**
- **Road test, taken under the direction of a supervisor.**
- **Safe-driver pledge card, which includes a list of things to do and not to do.**
- **Employee accident record card; listing any accidents and also safe-driving awards.**
- **Accident investigation report; prepared by management.**
- **Accident review committee meeting. (Described later in this article.)**
- **Minutes of accident review committee meeting, listing details of accidents and recommendations for prevention.**
- **Driver's vehicle report. This report is for the shop but reminds the driver that he is responsible for the condition of his vehicle.**
- **Safe driving awards, consisting of certificates, five-year pins and cash awards.**
- **Determination of driver's responsibility for accidents, a procedure following National Safety Council rules.**

Establishing the mechanics of the program was relatively easy, getting full cooperation from drivers and loaders was another question. The manner in which we accomplished this was both simple and effective. As regards safety, the program placed the loader on an equal position with the driver, holding him just as responsible as the driver for any accident. In short, driver and loader became a team, competing against all other teams for safe-driving records. All of the men were suddenly asked to do something considered as vitally important, and they responded.

Radio Contact

While we called several mass meetings at the beginning of the program, continued sessions for men who start work at 5 a.m. posed a problem. Manning their trucks at four widely separated points added to the difficulty. Yet contacting the more than 200 men on a regular basis, rather than a short-time spurt, was essential to a continuing program. Someone suggested using radio and this idea we quickly adopted.

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* Mr. Snook, safety engineer for the General Insurance Company, operates out of the company's Seattle office.

The foreman at each center has a radio-equipped pick-up truck with which he maintains contact with the dispatcher and superintendent. At least once each week the men at all disposal centers gather around their foreman's truck to hear superintendent Mario Torre give a safety talk, including hints and news on safe driving conditions, word of streets barricaded for repairs, news of accidents and other pertinent information. This weekly, or oftener, broadcast does much toward keeping the program alive and the men safety minded.

Another important innovation is the annual banquet and awards meeting. At this event last December, 165 drivers and loaders received awards, plus $5 in cash for every accident-free year. In addition to the one-year awards, 36 men received two-year awards, 37 obtained three-year awards and 17 were recognized for working four years without a mishap.

Accident Review

The monthly accident-review meeting serves as one of the more important elements of the program. For many of the men this was the first formal meeting that they had ever attended, so this too gave them status.

Drivers and loaders involved in any accident during the month are required to attend the meeting; and many others attend on their own volition. Alphonso M. Morelli, a partner with Josie Resore and John Banchero as owners of the firm, usually represents management at these meetings. Mr. Sprague, the insurance broker, presents the accident reports and a representative of the Traffic Division, Seattle Police Department is on hand to tell how the accidents might have been prevented.

The procedure consists of having the truck driver present his story of the accident, using a paper-covered easel for illustrations. Morreli, Sprague and Madden then ask questions and the decision as to whether the driver was responsible rests with the vote of the other drivers and loaders present. They have proven to be an extremely critical but honest jury.

No accusations are leveled against the driver nor is he penalized. The prime purpose of the meetings is to promote accident prevention through an analysis of accidents that did take place, plus a discussion of preventive measures.

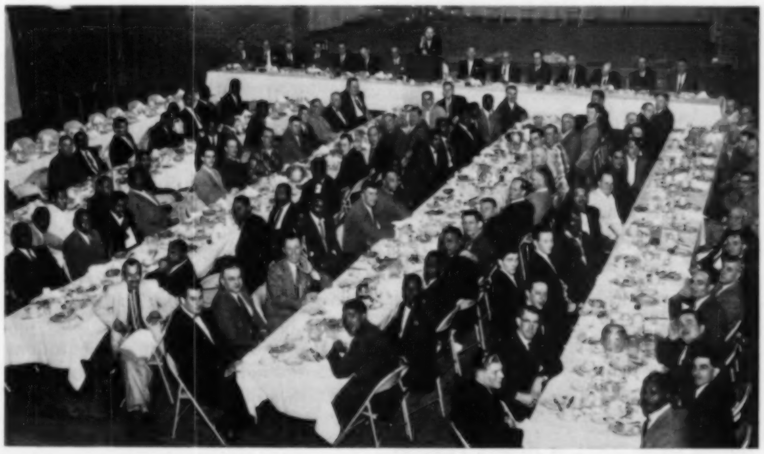
Sprague drafts a monthly bulletin, outlining accident details and presenting safe driving suggestions. These are given to every driver and loader. Sprague estimates that 80% of accidents with collection vehicles occurs while backing up—pointing out the importance of loader-driver teamwork.

A few statistics bear out the success of the program. Seattle Disposal operates an average of 130 vehicles that travel about 1,500,000 miles per year. They cover 80 residential collection routes, with 25 open trucks serving the business districts. Another 20 trucks haul earth for the sanitary fills. Other vehicles include trucks for foremen and management.

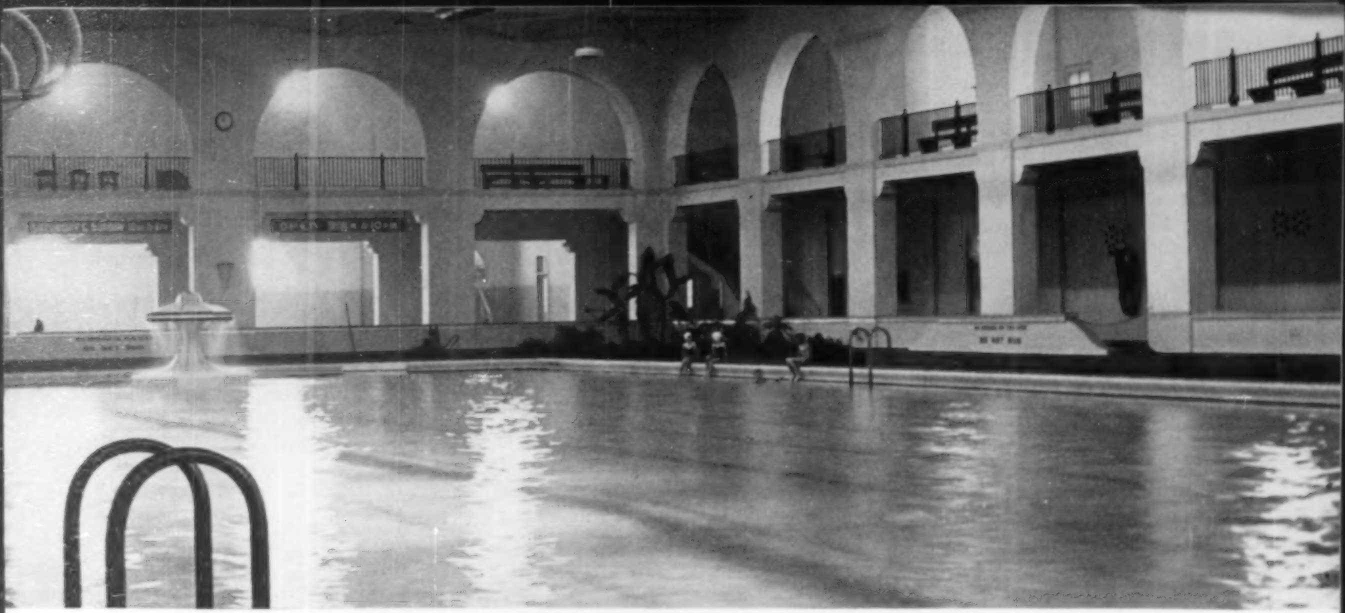
In the first year, accident claims, and thus insurance premiums, went down 80%. While this was the first year of the program—and a record year—a 37% reduction has been maintained to date.

Other benefits include better care of equipment with subsequent lower repair and maintenance costs, lower state workmen's compensation costs and higher morale which results in better service. ◂◂

By means of monthly meetings, employees and management discuss accidents and means of preventing them.



The annual banquet serves as the setting for presentation of safety awards.



The aims of a swimming-pool operator should be similar to those of water-treatment-plant superintendents.

A state health department official provides some . . .

Tips for Swimming Pool Operators

By **W. M. HONSA***
Springfield, Ill.

The modern swimming-pool installation is essentially a water-supply treatment plant. The objective of the pool operator should be identical with that of the water-plant operator: to produce water which meets the bacteriological standards of the state health department for a safe drinking water supply.

Both should seek an effluent absolutely free of coliform organisms and low in total count of all organisms. Illinois requires that swimming pool analyses indicate the presence or absence of streptococcus organisms. Occasionally, a report indicates beta hemolytic strep bacteria, a rather serious type of contamination. Immediately on receipt of such a report, we contact the pool management by telephone and advise greater care in the operation of the pool, particularly in the maintenance of an adequate free chlorine residual and the frequency of overflowing.

Without satisfactory and adequate recirculation, filtration and other treatment equipment, no pool manager can hope to maintain sanitation. But without intelligent and effective operation of this equipment and in the absence of other safeguards, the pool can be as dangerous as a contaminated river or lake. Operating the pool to maintain proper and sanitary conditions requires:

- **Recirculation through the filter plant not less than every six hours. The pump should operate 24 hours per day to prevent any after-hour build-up.**
- **Operation of the filters, whether sand or diatomaceous earth, in accordance with the recommendations of the manufacturer both as to filtration and backwashing procedures.**
- **The proper application of disinfectant to obtain the necessary "free" residual values.**
- **The addition of soda ash or an acid compound to maintain the pH within the desirable limits of 7.2 to 7.6.**
- **The daily addition of water to cause overflowing for a ten-minute period to rid the surface of hair oil, body oil and other film accumulations which normal recirculation fails to accomplish. The pool must have perimeter overflow gutters of adequate size to remove this surface film.**
- **Vacuuming the bottom twice each week to remove sediment which adheres to the surface. Some pools contain vacuum fittings attached to the recirculation pump; other operators employ portable vacuum pumps.**
- **Keeping the dirt and pollutional matter brought into the pool water by swimmers to a minimum.**

The Illinois Department of Public Health emphasizes this last point for sanitary operation. The pool management should insist on and enforce adequate bather preparation. Bathers will use these sanitary facilities properly only if they are adequate and convenient, rules notwithstanding.

To prevent polluted matter from reaching the pool operators should:

- **Conveniently locate adequate toilet and shower facilities.**
- **Provide adequate hot water through heating and storage capacity to service the peak load of bathers.**
- **Require prospective bathers to shower in the nude.**
- **Follow good housekeeping practices to prevent bathers from tracking dirt into the pool.**

The minimum sanitary requirement for municipal pool construction in Illinois lists more than 50 rules relating to water supply, pool structure, fittings, overflow gutters, water

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* Mr. Honsa is the Sanitary Engineer for the Swimming Pool Section of the Illinois Department of Health. Prior to World War II, he operated the water-treatment plant at Streator, Ill.

Diving and splashing reduce the chlorine residual at a rapid rate.

Good design reduces the contamination by placing a concrete deck between the pool and the containing fence.

recirculation, filtration and treatment equipment, cross-connections, wading and spray pools, dressing areas, and toilet and shower facilities, among others. Other states enforce similar requirements. Pool operators should review the applicable requirements at regular intervals to stay abreast of the field. To assure the proper design and construction of public pools, many states require that the plans and specifications be prepared by a registered engineer or architect.

The operator of a water plant finds it comparatively easy to maintain chlorine residuals in the distributions system. Chlorine residuals dissipate rapidly in swimming pools, however, because sunlight, algae growth and the continuous introduction of organic matter draw heavily upon this relatively slight chlorine residual. Agitation of the water by bathers and divers also acts to diminish the free chlorine.

The act of swimming itself rinses contamination from the bathers' bodies. Some bathers track contamination into the pool from the decks. Even the wind deposits material which it whisks off the streets into the pool. The chance of after contamination of water supplies, on the other hand, is rather remote.

In the operation of a pool, the chlorine-contact time is the short period from the point of application to the point of discharge, usually only a few seconds. Only a free hypochlorous acid type residual at an adequate level combined with a proper range of pH valves assures a quick bacterial killing action. The chlorination at a water plant follows a more leisurely pace. If the operator prechlorinates he reaps the benefit of coagulation, sedimentation and filtration time in addition to the reservoir holding period prior to distribution.

The above comparisons are not to indicate a superiority of one method over another but to show the parallel between the two systems as they exist in practice. If a swimming pool operator needs aid or advice, he may consult with the local water-plant superintendent in addition to the state health department. He must, however, examine the facts in the light of the different type of operation of each system.

Poor Results

With mismanagement, overcrowding or insufficient capacity, some pools warrant classification as sewage-treatment rather than water-treatment plants. This condition was much more prevalent about 30 years ago when fill and draw pools were numerous. Formerly, some operators set their sights only high enough to prevent their pools from becoming nuisances instead of attempting to maintain water of potable quality in their installations.

Contributing to this situation were two bugaboos: disregarding the rule requiring patrons to take showers prior to entering the pool and the absence of adequate water-treatment facilities. The effect was to reduce the water in the pool to diluted sewage comparable to that found in rivers downstream from discharging sanitary sewers. These operators attempted to neutralize the pollutional load by dosing heavily with chlorine. Near the outlets to the pool, the free chlorine stung the bathers' eyes; in the middle of the pool, none remained. The pool operator of today realizes that he needs more than a heavy shot of chlorine to protect the bathers' health in an adequate manner.

Operating a swimming pool effectively requires more than the ability to turn a few valves and hose down the deck. A pool manager should develop the "public-health" point of view. He should have a basic knowledge of the water-treatment process and maintain the pool in accordance with high standards of health and safety. ◄◄

A street like this swallows up maintenance dollars continuously.

To reconstruct it, Ferguson uses city forces and equipment to do part of the work, paying the cost out of the city's general fund.

Ferguson, Mo., adopts a resourceful financing and construction plan that brings . . .

Short-Term, Long-Term Street Aid

By **S. DOLECKI, P.E.***

Ferguson, Mo., like most other growing communities, faced the serious problem of constantly increasing street-maintenance costs — and did something about it. The question was how to use most efficiently the available dollars for street-maintenance work. The solution took the form of a "short-term, long-term" program to upgrade or reconstruct those streets falling below the city standards and to maintain the rest in sound condition.

The successful operation of such a program first requires an inventory of facts, gathered either in a card file or in map form—or preferably both. This inventory performs three main functions:

- **It helps you decide which streets need what kinds of maintenance, i.e., patching, resurfacing, major overhaul.**
- **It helps establish a system of priorities so that you can arrange an orderly program that will bring improvements quickly to the areas where they are most needed.**
- **It serves as the basis for determining preliminary quantities when estimating proposed program costs.**

Maintenance Categories

The Ferguson program consisted of three maintenance categories:

A. *Minimum care* for the strong, well-built streets. For example, Portland-cement concrete streets generally require only resealing the joints. An asphalt street with a concrete or well-designed stabilized base will need seal coating approximately every five years. We consider these our "standard" streets that generally require no more than occasional patching.

B. *Upgradeable streets*, those in sufficiently good condition to justify some form of rebuilding. Upgrading usually consists of placing asphaltic concrete overlays, construction of curbs, "wedging" some pavements and similar work. These streets also receive maintenance described under A.

C. *Deficient streets*, so bad that maintenance becomes continuous if traffic is to use them at all. In such cases it becomes more economical to undertake a complete reconstruction program to bring them up to "standard."

The minimum thickness requirements of a standard residential street in Ferguson are six inches for unreinforced Portland-cement concrete and nine inches for bituminous material (seven inches of water-bound macadam base surfaced with two inches of hot-mixed, hot-laid asphaltic concrete with concrete curbs. The standard width of residential streets is 26 feet measured from "back to back" of curbs.

Problem Streets

Ferguson found the category "B" or the upgradeable streets most troublesome. These frequently have one factor, such as slab thickness or drainage facilities, built to standard while the balance of the factors are below standard. They provide fairly good service but a study of work orders shows them under repair all too frequently.

The question arises: Should we continue routine maintenance or begin upgrading? In the latter case,

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* Mr. Dolecki was formerly the director of public works and city engineer of Ferguson, Mo., and is now associated with the consulting firm of Ferris & Dolecki Associates, St. Louis County, Mo. He is also the city engineer of Moline Acres, Mo.

Property owners then pay the balance through assessments and, in this case, get a good, substantial maintenance-free concrete street.

we have to find funds other than those designated for maintenance. In some cases the work can be assessed to the benefited property.

Often we can provide a "one-shot" remedy that will improve the street sufficiently to place it in, or nearly in category "A". Examples include installation of curb and gutter, construction of storm drains in critical areas, widening the surfaced portion or an asphaltic concrete overlay. In terms of added street life, the cost of this work ought to be less than continuous maintenance. Moreover, public convenience ought to be worth something, as well as the fact that we have reduced the cost of street maintenance in the general tax fund.

While the type "B" street may present the most troublesome decisions, the type "C" street places the heaviest drain on the maintenance dollar. In Ferguson this type comprised approximately 35% of the city's total street mileage.

Beginning in 1956, the City Council adopted a program to reconstruct substandard streets to eliminate continuous costly maintenance. The work was to be financed by special assessments against the property benefitted. But since the city at large also would benefit through reduced maintenance costs, the Council agreed to pay certain expenses.

These expenses included excavation, backfill, engineering and administrative costs plus the expense of replacing walks, drives and steps and transplanting shrubs and similar items needing relocation. The Council further limited the cost to the property owner by establishing by resolution a maximum assessment per front foot of $6.50. Many property owners are benefitting from this resolution, for prior to the 1960 price increase, the cost of repaving averaged between $12 and $14 per lineal foot of street.

Property Assessments

Property owners can pay the assessment over a ten-year period with 5% interest charged against the unpaid balance. A $200,000 revolving fund established for this purpose puts payment to the contractor on a cash basis.

This program has definitely reduced maintenance costs. Since 1954, as a result of annexations, new subdivisions, and paving of old platted streets, street mileage increased by almost 50%. During this same period labor, material and equipment costs rose considerably. Yet the most recent budget allowance for street maintenance is no greater than that in 1954.

Besides reducing maintenance costs, the upgrading program produced such benefits as elimination of drainage ditches and other unsightly items, reduction of steep and hazardous grades, improved sight distances as well as improved drainage.

All this tends to beautify a neighhorbood and this carries over to the individual property owner who generally takes renewed pride in keeping up his home.

Getting such a program started is a big job, but since it is a long-term proposition, keeping it going is also important. Here the career official can play an important role by carrying on an education program to convince new Council members and other elected officials of the true value of the program. In this connection, carefully prepared records on maintenance costs over the years often prove most effective. ◄◄

The duplicating section completed over 10,000 assignments last year and with new equipment should be able to double the volume this year.

Central Reproduction Division

. . . in Milwaukee, Wis., does everything from taking pictures to producing confidential reports

One division in Milwaukee's city government performs duplicating work for the approximately 50 departments, boards and commissions with a few exceptions because of the confidential nature of the work. The Central Reproduction Division of the Central Board of Purchases employs offset duplicating, mimeographing, and spirit duplicating and keeps the plates or stencils on file for future use. It finances the costs of this operation by billing the various departments and crediting these receipts against the expenditures under a rotary account.

This division also maintains a photographic-equipment pool from which all departments obtain the proper photographic, visual aid, audio and other similar equipment.

City Purchasing Agent Andrew L. Lehrbaummer reports that the offset section of the division performed 1,220 assignments last year, with a total billing to departments of $39,420.43. The outstanding jobs produced were the visual organization inventory, the new telephone directory and the budget summary, which had a tight deadline as it changed during hearings.

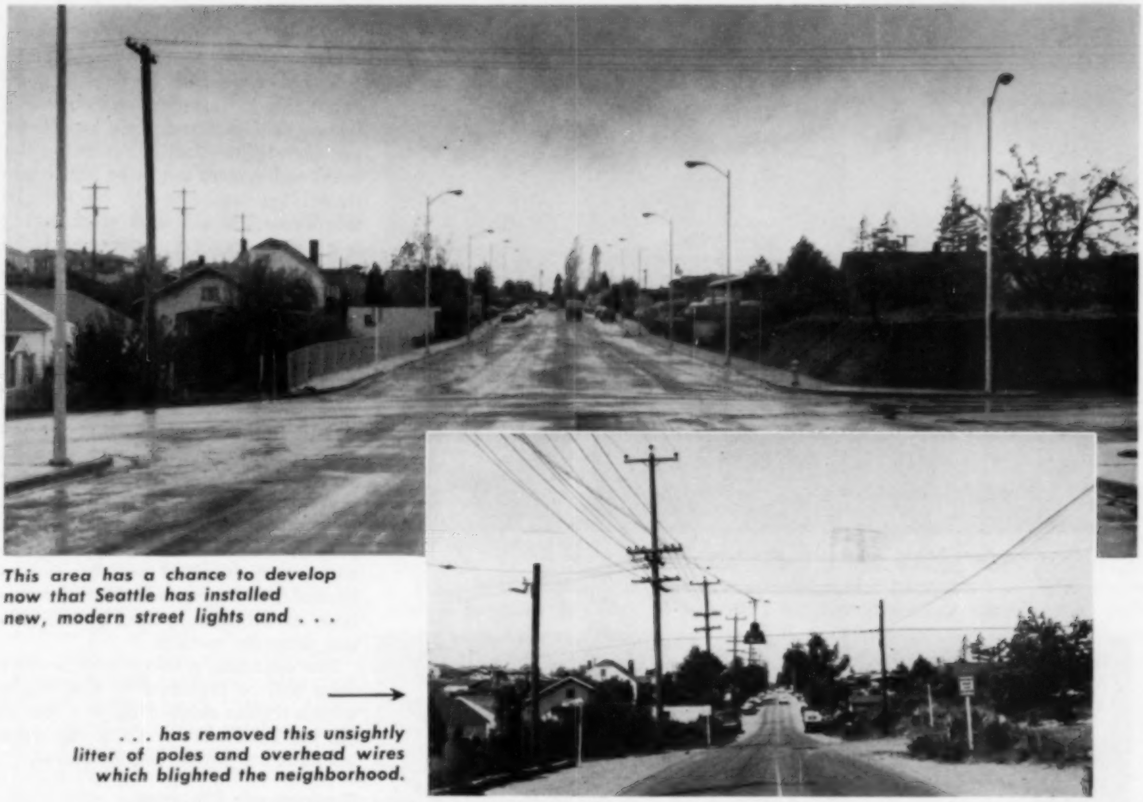
The duplicating section of the division handled 10,442 assignments in the same year with a billing of $27,861.06. This included $1,053.39 for Thermofax and photocopy work. In December, these copy machines were supplanted by the Xerox 914 machine, which, judging by the short time it has been in use, promises to more than double the volume of this type of work, with far better quality than was possible with the other machines.

Although the photographic section added no new equipment in 1960, the use of the cameras accelerated with a resulting increase in a total billing for the photo finishing of $3,216.54 to the respective departments.

Most of this equipment is over five years old and, since it is handled by various persons, many somewhat inexperienced, there is a very definite need for a replacement program. Presently, the users pay only a small additional charge on the photo printing for using the equipment.

The activity in furnishing photographic equipment in 1960 to various departments appears in the accompanying table. ◂◂

Photographic Unit	Times Used
2 4x5 Speed Graphics	161
3 35-mm (2 Signet; 1 Cantaflex)	136
4 Polaroid (2 #95; 1 #110A; 1 Electric eye)	319
3 16-mm movie (2 Eastman Magazine; 1 Eastman Professional)	10
2 35-mm slide projectors (500 watts)	93
1 16-mm movie & sound projectors (Bell & Howell)	78
2 Tape Recorders (Bell & Howell)	55
3 screens (50 x 60-inch)	108
1 opaque projector (8 x 8)	7
1 Illustrovox	2
35-mm 2 x 2 slide viewer	9



This area has a chance to develop now that Seattle has installed new, modern street lights and . . .

→

. . . has removed this unsightly litter of poles and overhead wires which blighted the neighborhood.

Seattle, Wash., completes the first step in a $7,680,000 program that will . . .

Get the Wires Underground

Casting a balance at the close of the first year of a six-year program, Seattle City Light can point to substantial progress on its $7,680,000 project to expand its underground wiring system and to improve the appearance of the overhead distribution system.

Authorized by the City Council, the program started in April 1960 with $4,440,000 earmarked for the underground work and $3,240,000 allocated for overhead improvements during the six-year period. In addition to work initiated by the municipally owned utility, cooperation with communities seeking to improve the appearance of their neighborhoods is an important aspect of the program.

One of City Light's first steps was to assign a supervisor to coordinate and promote improvement work by arranging for community-sponsored projects, following up new residence and business building construction to prompt attractive electric-power installations, and acquainting community and civic groups with the utility's improvement program.

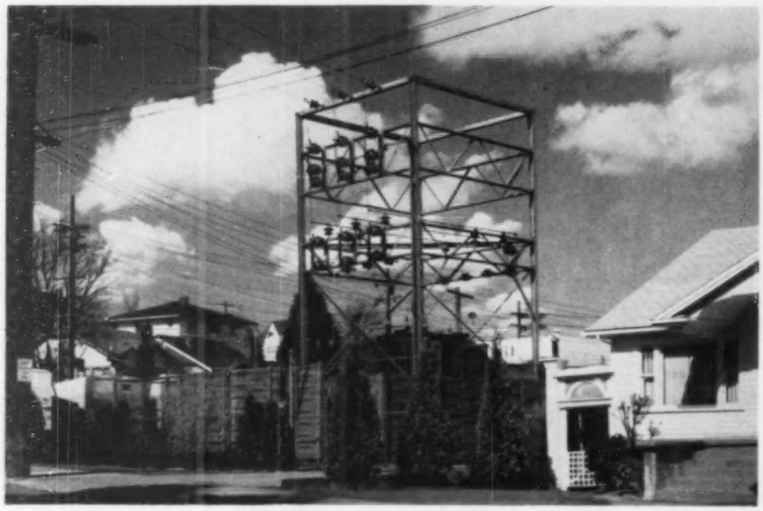
Suburbs Join Effort

In order to facilitate moving all possible overhead wiring underground or relocating it for improved appearance, City Light people have been working with representatives of Pacific Telephone Northwest and the Engineering Department of the City of Seattle.

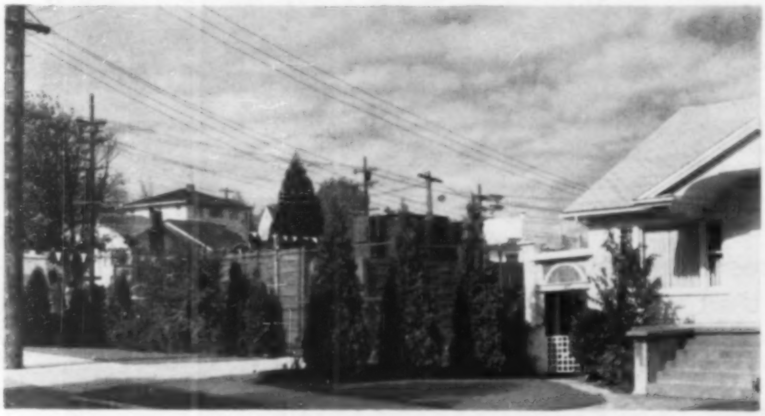
One outstanding result of cooperation with communities in promoting improvements is the forming of a local improvement district (L.I.D.) in suburban Seattle, believed to be the first of its kind in the nation, for financing the relocation underground of all overhead wiring. This project also hopes to eliminate the forest of TV antennas now sprouting from housetops. The proposed L.I.D. involves 118 pieces of residential property, the owners of which will vote a special assessment to finance a bond issue for the work.

The plan, involving homes in the $30,000-$50,000 class, provides that electric power, telephone and street-lighting wiring be placed underground. Included too, will be a coaxial cable which homeowners will wire into, making individual TV antennas unnecessary.

Primary power lines will be installed in ducts; services will be



This towering, bare-bones substation structure . . .



. . . no longer casts a blight on this residential neighborhood.

direct burial cable. Engineering of the project now underway indicates that, generally, pad-mounted transformers will be used, but, in some locations because of the terrain, subsurface vaults will be required.

Costs per property owner are figured on a "zone and termini" basis and also vary with the type of terrain, number of street crossings, bulkheads and rockeries. Each owner will provide trenching and backfilling on his own property and, in addition, will pay an average of approximately $10 a front foot, according to Gene Laster, City Light's underground specialist, who works with community programs. These approximate costs break down as follows per front foot for relocation underground of overhead lines: electric power, $5; telephone, $2.50; street light, $1.50, and coaxial cable, $1.

The $5 charge for power-line relocation is an arbitrary amount set by the utility to expedite the project and obtain actual cost figures. The utility has agreed to absorb costs in excess of $5 for this portion of the work.

Residential Areas

In areas of new residence construction, the cost of the underground service is figured as the difference between that work and installation of an equivalent overhead distribution system. When existing overhead systems are to be placed underground, the cost of the work to the property owner considers depreciated value of the original system, removal cost and salvage values. The life of an overhead system is generally set at 25 years.

If the replacement value of a 15-year-old overhead system is $150 depreciated value would be $60, Laster said in illustrating how costs are arrived at. Cost of removing the overhead system might be $25, while its salvage value might be $10. In this event, the net cost of changing to an underground system would be $60 plus $25, less $10, or $75. Added to that would be the cost of the underground work, which ordinarily would be about $10 a front foot (or $9 if the coaxial cable were not included) plus the trenching and backfilling.

City Light is encouraging formation of L.I.D. programs, now that the first one is nearing reality, in order that as large areas as possible might be included in a single improvement project. The alternative, when a community-inspired program is impossible, is betterment of the overhead distribution system by individual property owners.

For example, a three-wire service drop will be replaced by City Light with a triplex cable drop at a cost of $25 per residence, or $20 if the work involves an entire neighborhood.

Removes Clutter

The utility itself is working for an improved appearance of its entire overhead distribution system, work for which $3,240,000 is available. Wherever possible, congestion on poles is reduced by eliminating duplicate facilities (left over from the days when two electric utilities served Seattle) by using shorter primary crossarms and eliminating secondary crossarms through the use of triplex secondary, and shorter poles. By the end of the twelfth month approximately 626 miles of wire, 14,861 crossarms and 832 transformers has been removed.

City Light estimates that two crews can reconstruct single-phase residential-system overheads at the rate of about six miles a month. The system involves 2,200 miles of overhead line.

The improvement program also calls for low-profile distribution substations in residential areas, with all incoming and outgoing lines underground. More, the immediate areas around these substations are being given a park-like appearance.

In addition to the six-year improvement program and its expenditure of $7,680,000 the capacity of existing underground systems is being increased. This work involves an expenditure of about $600,000 a year. ◄◄

How to Select and Install Water-works Pumps

Part II—Relative merits of dry-pit and wet-pit pumps; design considerations for wet-pit installations

By **IGOR J. KARASSIK**
and **CHARLES J. TULLO***

The choice between dry-pit and wet-pit pumps is controversial; supporters express strong preferences for both types.

The major attraction of the wet-pit pump is that the impeller is below the surface of the water in the suction pit or well. Thus, one does not need an elaborate dry-pit or pump-priming facilities. Also, with proper submergence, these pumps can operate at higher rotative speeds than the dry-pit type.

In a dry-pit installation, one must determine accurately the range or variation of suction lift and check it with the manufacturer to insure that the pump installation will avoid cavitation under all prevailing conditions. The designer also must take special precautions to insure priming of the pump. This requires either priming facilities or installation of the pump in a dry pit at such a depth that the water in the suction channel leading to the pump will remain at the level recommended by the manufacturer to insure self priming.

Some of the factors involved in the choice between dry-pit and wet-pit pumps lend themselves to a straight economic evaluation. These factors include the relative cost of the pumps themselves and the drivers, or the relative cost of the installation. For instance, in certain areas water may be taken from rivers that have as much as 40 feet or more variation in level. Here building costs for a dry pit may be considerably greater than the cost of a wet-pit installation. Other factors, no less important, are intangible. They involve such matters as the probability that the water-lubricated bearings of a wet-pit pump will require more frequent maintenance than the external oil-lubricated bearings of the dry-pit type. Another intangible factor is the difference between the hydraulic characteristics generally encountered for the two types of construction or the potential difficulties that may be encountered in the layout of the suction approaches. We will discuss these factors in some detail further on in this article. Only experience and sound judgement can give these intangible factors their proper and deserved weight. But an evaluation which excludes these intangible factors because they are difficult to handle will always fall short of adequacy.

Hydraulic Performance Characteristics

Impellers of different types usually have widely different performance characteristics, as indicated by the shapes of the head-capacity and power-capacity curves included herein for four different pump-specific-speed types. The specific speed of a centrifugal pump is an index number which is indicative of the "profile" of its impeller and which is *numerically* equal to the rotative

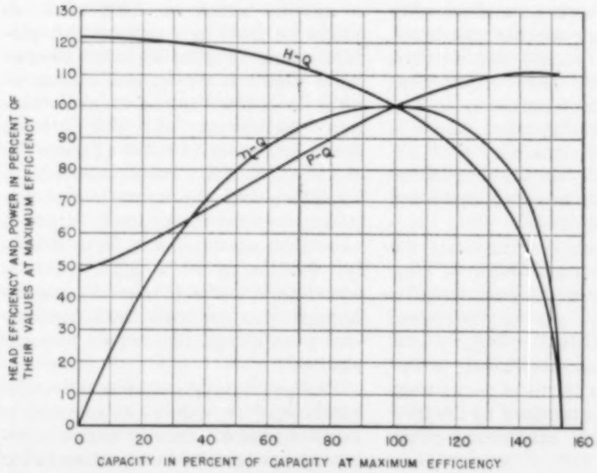


Fig. 1. Type characteristics for a low-specific-speed, double-suction impeller pump.

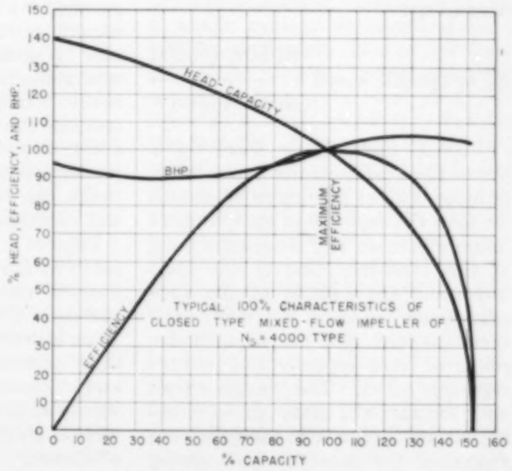


Fig. 2. Type characteristics of a mixed-flow impeller with a specific speed of 4,000.

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* Mr. Karassik is a consulting engineer and manager of planning, and Mr. Tullo a consulting engineer, for the Harrison Division of the Worthington Corporation.

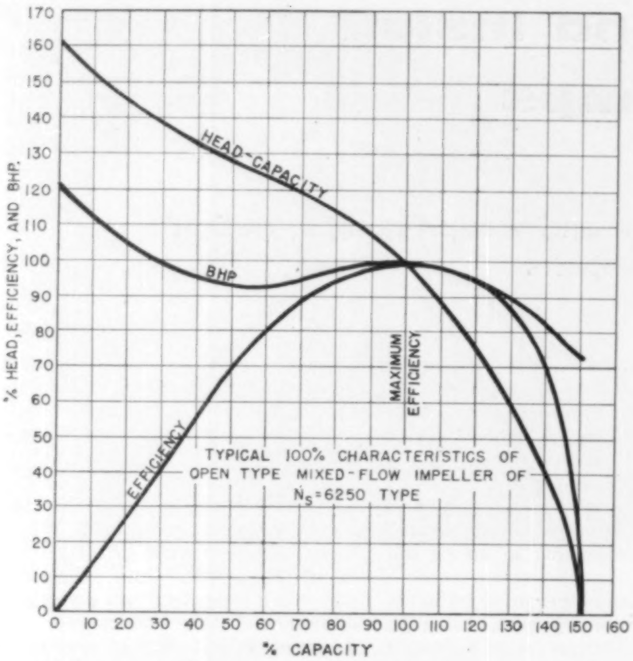


Fig. 3. Type characteristics of a mixed-flow impeller with a specific speed of 6,250.

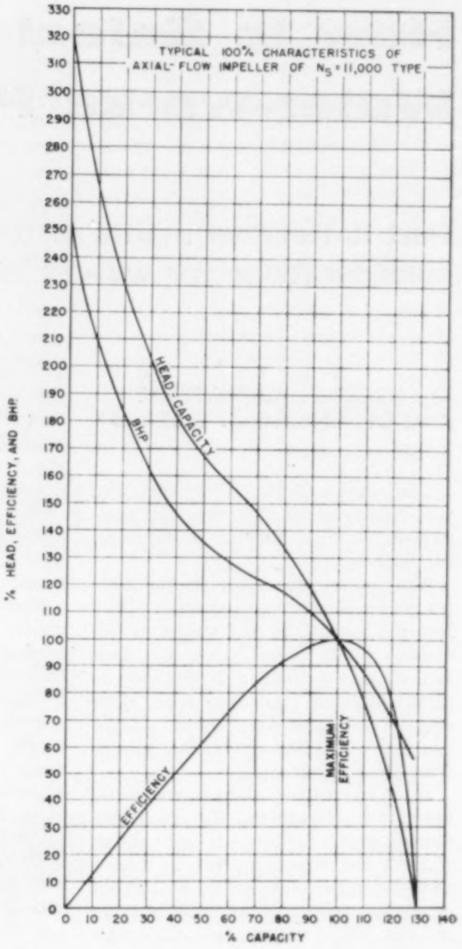


Fig. 4. Type characteristics of a high-specific-speed diffuser-type pump with a specific speed of 11,000.

speed at which a geometrically similar impeller would run if it were of such size as to discharge one gallon per minute against a total head of one foot. It is mathematically expressed as:

$$N_S \text{ or specific speed} = \frac{\text{RPM x } \sqrt{\text{GPM}}}{(\text{Head in feet})^{3/4}}$$

Since the specific speed of a pump has real meaning as an index number only at maximum efficiency, we take the capacity in gpm at maximum efficiency and determine head at this capacity. One of the most important applications of the specific-speed concept is that each specific-speed type has a particular shape of head-capacity and power-capacity curve. The designer can vary the shape of these curves within certain limits by changing the shape of the impeller and casing water-ways. Nevertheless, the variation which he can produce without adversely affecting the pump efficiency is relatively small.

Information is readily available to guide the user in the selection of the recommended range of specific speeds for a given head and capacity condition. Higher specific speeds result in smaller pumps and drivers, and subsequently lower equipment costs. While the temptation of exceeding the recommended range is great, one must remember that selections beyond the recommended range can result in noisy operation and cavitation damage.

Figures 1 through 4 illustrate the performance characteristics of four pumps with four different specific speeds. These curves represent "type characteristics," in other words they express capacity, head, power and efficiency in terms of percentage values of these quantities at the flow which gives the maximum pump efficiency.

The low-specific-speed pump (Figure 1), typical of the horizontal-shaft double-suction type has a very moderate rise in head with a reducing capacity and a non-overloading power curve with a reduction in head. The mixed-flow impeller with a specific speed of 4,000 such as might be used in a vertical dry-pit-type pump (Figure 2) has a steeper head-capacity curve and a reasonably flat power curve which is also non-overloading. As the specific speed increases to 6,250 (Figure 3), the head-capacity curve increases in steepness and the curvature of the power curve reverses itself, hitting a maximum at the lowest flow. Finally, the curve of a high specific-speed-type pump (Figure 4) has the highest rise in both head-capacity and power-capacity curves towards shut-off.

Pumps having a relatively flat head-capacity curve experience a large change in capacity with a modest change in total head, whereas for steeper head-capacity curves, a small change in capacity carries with it a major change in the total head developed. Depending on a multitude of factors, such as the proportion of static and friction head and the relative frequency of operation of two or more pumps in parallel, there may be some advantage in a flatter or a steeper head-capacity curve. But when it comes to the shape of the power-capacity curve, the steeply rising curve as in Figure 4 is normally at a disadvantage. Pump operation well on the left of the best efficiency capacity requires a larger driver to avoid serious overloading. Other undesirable effects in addition to greater cost for the driver, may be introduced. For instance, since the inrush (or starting) current is a direct function of the size of the motor, normally running to as high as 600% of the current at design horsepower of the motor, the steeper power-capacity curve results in a much greater inrush current than in the case of a flatter curve. This may introduce serious problems for the projected installation because utilities in certain areas impose definite limitations on the maximum permissible inrush current, and exceeding these limitations may lead to greater power costs.

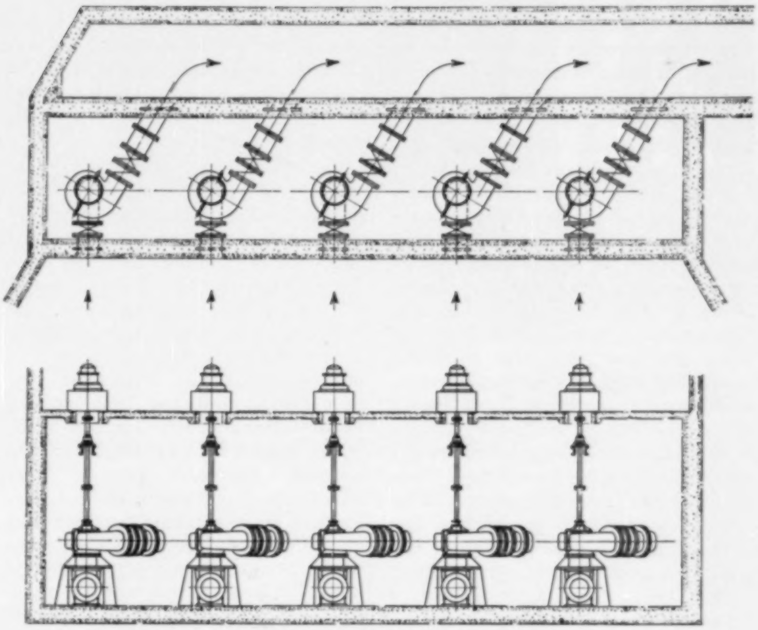


Figure 5. Typical dry-pit pump installation showing how suction line insures uniform flow into the pump.

System Hydraulics

A pump is only part of a pumping system. The hydraulic design of the system external to the pump will affect the overall economy and performance of the installation, with that part of the system at the suction side of the pump affecting pump performance most adversely.

The basic requirement for satisfactory operation is that water must flow to the pump in a smooth manner. Thus the designer must exercise a great deal of caution in designing the pump suction approaches. In this connection he should utilize, by referring to the published information or by discussing the problem with the pump manufacturer, the great deal of laboratory and field research that has been carried out in sump and channel designs for both dry- and wet-pit pumps.

In our experience, the dry-pit pump is not too sensitive to the suction-well design, since the inlet piping and the framed design of the suction passages into the pump normally insure a uniform flow into the eye of the impeller (Figure 5). However, we still advise that the pump manufacturer be requested to review the installation and drawings and suggest any changes which would improve the pump operation.

On the other hand, the higher-specific-speed, wet-pit pumps are more sensitive to departures from ideal flow conditions than the lower-specific-speed centrifugal-volute pump or the medium-specific-speed, mix-flow-type pump. This sensitivity is especially pronounced with regards to irregularities at the inlet side of the pump. Thus, special emphasis must be placed on the design of the suction intake.

If a wet-pit pump will operate in a drilled well, the designer must exercise extreme caution when determining the well size in order to satisfy the predicted water demand. Too often, the stress on low installation cost is excessive and leads to difficulties. A well with too small a diameter will have an insufficient water delivery. To force a well, meaning to overpump its capacity, is poor economy, and usually results in excessive drawdown. Consequently, the pump will draw water that contains a greater percentage of foreign matter than usual and more rapid wear of the pump parts will take place.

Large-capacity wet-pit pumps generally draw water from a lake or river, rather than from wells. Here, the designer runs the risk of providing an inadequate intake to these pumps.

Since the floor space occupied by each unit is small, he may be tempted to reduce the size of the installation still further by placing the units closer together. In such a case, the suction arrangement may not permit the proper flow of water to the pump-suction intake. All too frequently the designer regards the sump merely as a hole in the ground where water is allowed to enter in whatever manner it pleases, leaving the burden of properly handling the water entirely to the pump itself. This careless type of treatment results in adverse publicity for wet-pit pumps when the system design is to blame.

The design of a suction well and the location and arrangement of the suction bellmouth of a wet-pit pump involves many factors and these must be studied thoroughly in order to obtain peak performance of wet-pit pumps. Simple rules or relations cannot be applied with complete assurance, so none are included here. To achieve satisfactory results the designer of the water-works installation must cooperate with the pump manufacturer. This means contacting the pump manufacturer during the preliminary design stages to discuss the arrangement and to arrive at a mutual understanding if any corrections are advisable.

Even with all these precautionary measures, one periodically finds that, on putting the equipment in service, further steps are necessary before the unit performs satisfactorily. Generally, poor flow conditions in the suction well or poor entrance conditions about the pump-suction bell cause poor performance and vibration, suction vortex formation, overloading of the driver or other operating troubles. Usually the installation of guide vanes or baffles in the well at the pump suction bell will correct the condition (Figure 6).

Field reports indicate that vertical wet-pit pumps do have some drawbacks, since they require approximately twice as much time for reconditioning as the dry-pit pumps. Much of this increased time and, subsequently increased cost, stems from the fact that the complete pump, including the driver, must be withdrawn to carry out any repair work; whereas the stuffing box heads of dry-pit pumps are removable and the pump need not be removed from its mounting, since the rotor can be pulled out through the top of the casing. Thus a wet-pit pump installation usually requires greater free space overhead since the entire unit must be pulled from the wet-pit for maintenance.

Also, wet-pit pumps generally require more frequent maintenance than do the dry-pit units. While the bearings of dry-pit pumps are external to the pump and are either grease- or oil-lubricated, wet-pit-pump bearings are completely submerged in and are lubricated solely by the liquid handled by the pump.

Variation in the amount of foreign matter contained in the water pumped, such as sand or silt, from one installation to another, makes it difficult to predict bearing life. Waters having too high a solids content make it advisable to provide lubrication by clean, fresh, filtered water from an external source where possible. However, even with the best design and the best care, a water-lubricated bearing is not the equal of an oil- or grease-lubricated bearing. Excessive bearing wear affects shaft operation, leads to vibration and ultimate destruction of all the internal running clearances in the pump. Consequently, the use of wet-pit pumps may require more frequent maintenance and higher maintenance costs.

Part III in this series will present the description of a few typical water-works installations of the dry-pit type. ◄◄

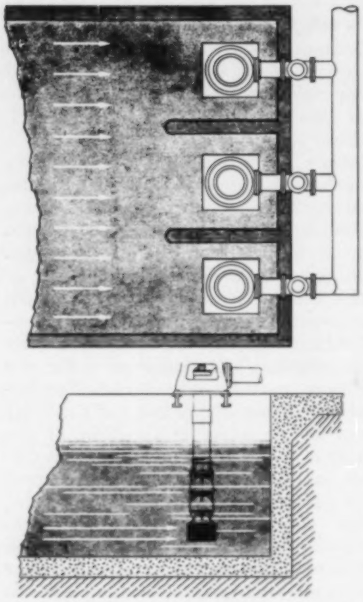


Figure 6. Proper pump spacing together with baffles in the well at the pump suction bell prevents uneven flow and vortexes, thereby providing better pump performance.

Hartford Records Council Meetings Electronically

Hartford has created a system of direct recording of local City Council meetings, zoning board hearings, assessment board hearings, and other hearings at the City Hall, including those of a recently appointed Charter Revision Commission.

Using Edison Voicewriter dictating-transcribing equipment, the new system eliminates manual note-taking, typing of hearings, and voluminous paper files. As a further benefit, all hearings are now available for reference in the exact, word-for-word manner in which they are held.

One Edison Continuous Message Recorder Group, complete with dictating machine and transcribing unit, is set up in the City Hall. The Edison Voicewriter units are tapped in directly from the Hall's public address loudspeaker system, using an amplifier and a microphone. The meeting may continue uninterrupted for any length of time, as the recording units have an overlap so that while one is nearing the end of its disc period the other unit has already begun to pick up the words being spoken.

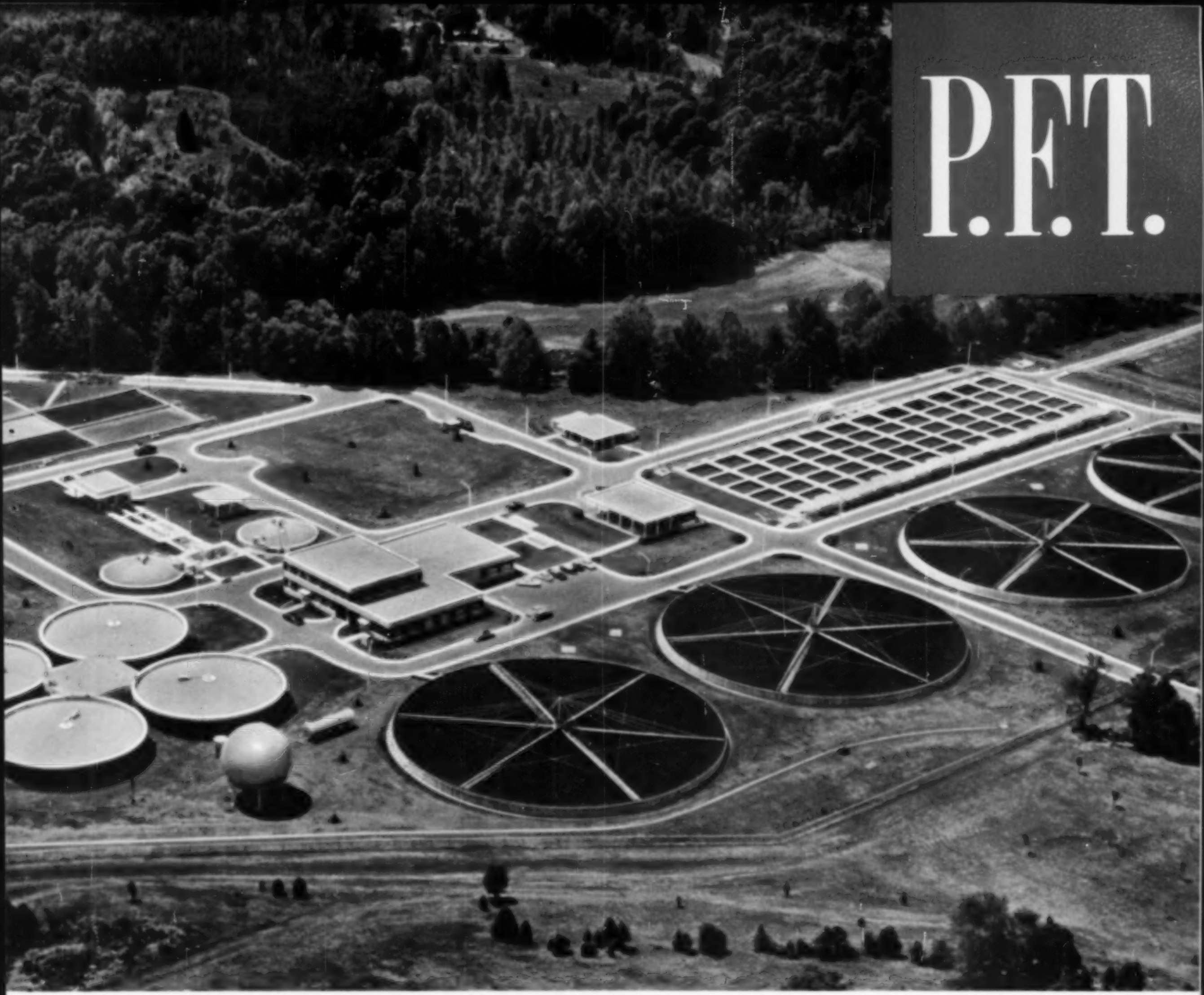
The recording units can be turned up or down and the speed or slowness with which the words are spoken makes no difference. Transcribing is done infrequently as most of the records are simply filed for permanent reference as required by law.

Ease of access to data contained in records of lengthy and detailed hearings was an important factor in setting up the present system. Discs are filed according to date and subject of the hearing, and key-point indexing makes it possible to locate subjects without replaying the entire disc.

Robert J. Gallivan
Town and City Clerk
Hartford, Conn.

Every word spoken in this Hartford, Conn., city council meeting is recorded on an Edison Continuous Message recorder, operated by Deputy Clerk Robert D. Delany. The speaker at the podium is Mayor Dominick J. DeLucco and the author is seated at his left.

P.F.T.



This is Winston-Salem's Waste Treatment Plant Showing P.F.T.'s 200' Rotary Distributors and P.F.T.'s 90' Floating Cover Digesters with P.F.T.-Pearth Gas Recirculation Systems.

Superior Waste Treatment at Winston-Salem . . . . Now and for Years to Come

Winston-Salem, "City of Culture, History and Industry" is a big city with big ideas; ideas that are materializing and consistently shaping the future of this southern metropolis.

In its metropolitan area there are over 280 diversified industries. Here you'll find the world's largest cigarette manufacturing plant—the world's largest men and boys' knit underwear manufacturer—the world's largest circular knit hosiery mills—and—one of the world's finest waste treatment plants.

This "bigness" spells out civic cooperation. In fact, Winston-Salem's motto is "The City Founded Upon Cooperation". Winston-Salem's growth has been planned and these plans are expanding.

All of this tremendous industrial and domestic growth demanded the ultimate in safe sanitation. Here again "the city of cooperation" took action and the construction of this waste treatment plant was the result of present and future-minded planning.

Excellently engineered this waste treatment plant places Winston-Salem among the nation's leaders in fulfilling their obligation not only to the community but its downstream neighbors as well. Winston-Salem knows that modern waste treatment equipment—P.F.T. equipment—and a modern waste treatment plant are truly a civic asset. Please turn the page for the story of P.F.T. at Winston-Salem.

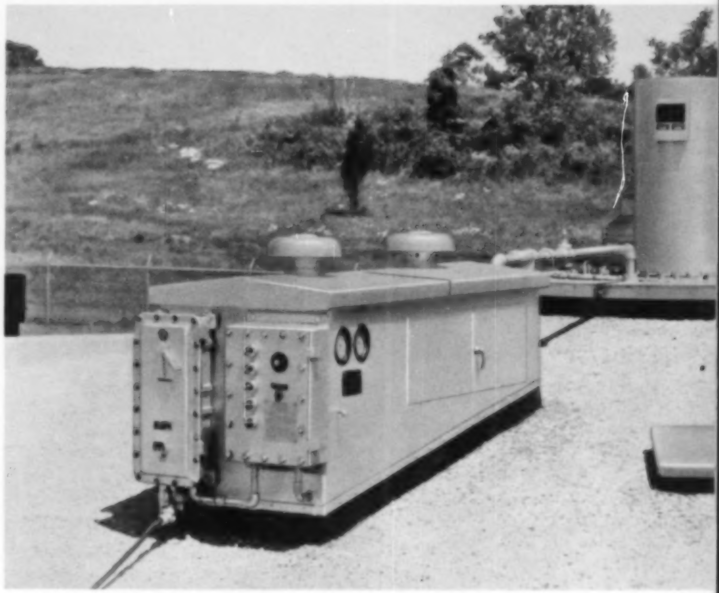
Manufacturers and designers of fine waste treatment equipment since 1893, the Pacific Flush Tank Company take pride in being a major participant in furnishing equipment for the Winston-Salem plant.

P.F.T. Rotary Distributors, 200′ in diameter, are designed to distribute 25.0 mgd of settled sewage uniformly over the entire area of each filter bed. Especially designed P.F.T. bronze forged spreader jets assure the most effective operation of these filters—these biological giants are the heart of this treatment plant.

The four 90′ diameter Digesters are equipped with P.F.T. Floating Covers; three of these units have the P.F.T.-Pearth Gas Recirculation system and the fourth has provisions for the addition of the P.F.T.-Pearth equipment without taking the units out of operation.

External Heaters and Heat Exchanger units by P.F.T. allow complete accessibility in a compact unit of high thermal efficiency. With these P.F.T. #750 heaters uniform temperatures are maintained throughout the digestion system. Other P.F.T. equipment in this digestion system includes Gas Safety Equipment, Supernatant Equipment, Floating Cover Gauge Boards with High and Low Level Alarms.

This P.F.T. "Controlled Digestion System" assures Winston-Salem the most modern installation with full control of the digestion process. Controlled uniform temperatures and positive elimination of scum build-up gives complete utilization of the entire digestion volume for more effective digestion even under the highest solids loadings of the digestion tanks.



One of the three P.F.T.-Pearth Gas Recirculation Systems.

Close-up of P.F.T. Rotary Distributor arm showing P.F.T. Spreader Jets.

P.F.T.

The Winston-Salem Waste Treatment Plant was designed by the Consulting Engineering firm of Piatt & Davis and Associates of Durham, N.C.

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How Miami's Metro Purchases

. . . and proves that it can save $500,000 a year by the use of "blanket" contracts, centralized operation and other methods

By **JOHN BERGER**
Director
Division of Purchasing

The Metro Purchasing Division, of Metropolitan Dade County (Miami Metro) can prove that it saved $500,000 during the first year of its operation and a total of $1,500,000 during its first three years.

The savings were the result of diligent and careful buying. Examples are paper cups bought for less than the federal government pays and an intravenous solution at Jackson Memorial Hospital costing 15% less than that bought by New York City hospitals.

"Blanket" contracting, centralized purchasing, waiver of performance bonds, encouragement of more competitive bidding and simplified internal operating procedures are among the examples of sound business practice that have produced these economies.

Blanket contracting means ordering in bulk, with delivery spread throughout the year. In this manner, Metro gets the lower rates of quantity buying without the costly necessity of warehousing. The manufacturer delivers goods on request but keeps the balance in its warehouses until needed.

Centralized purchasing is paying big dividends too. Under the old system, practically every Dade department had an employee designated to shop for items and then request them through the Purchasing Division. This, in effect, meant that each department had its own purchasing agent and the so-called Purchasing Division was little more than an ordering office.

Now every department requisitions each item that it needs and six trained buyers of the Purchasing Division shop for the best possible product in terms of quality, price and service.

The practice of waiving bid bonds with responsible firms has brought savings. Performance bonds were required of manufacturers certifying that goods would be delivered as promised. Suppliers, of course, simply incorporated the cost of the bond into their prices. By waiving the bond, the cost drops proportionately.

The division doubled the number of vendors who do business with Metro by sending specifications to all possible suppliers of a commodity, not merely those who ask for them. Incredible though it may seem, it just didn't occur to many businessmen to try to obtain county business. In 1959, Metro issued purchase orders to 3,225 vendors as compared with 1,912 the previous year. Many businessmen don't read the legal ads. It's worth a few four-cent stamps to reach some firms who might be low bidders.

Switching to compact cars for Metro's auto pool was another cost-cutting step and this was a direct recommendation of the Purchasing Division. This saving alone almost pays for the complete operation of that division each year.

Metro's cars travel about 7,000,000 vehicle-miles annually. Operating costs were cut from 2.2 cents a mile for standard cars to 1.2 cents for the compacts. That's a $70,000 annual saving.

Motorists may have been wondering about some 114 painted lines on a heavily traveled street. This was a traffic-paint test in which 26 manufacturers participated. After eight months of testing, the Division selected five yellows and five whites and purchased on a three-county basis to obtain substantial savings.

The Division makes a point of taking advantage of as many bankrupt stock sales as possible. This recently saved more than $2,000 on police uniforms alone.

Metro's contract for gasoline is unusual. The Division purchases 1,500,000 gallons a year by contract. The price is reasonable but Metro still gets the benefit of any local price decrease that may occur during the year. However, if the manufacturer's price of gas increases, the Metro price still does not.

One of our greatest accomplishments was the complete equipping of a new wing at Jackson Memorial Hospital last year at no increase in the purchasing budget. This was achieved by county-wide department savings. ◄◄

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Interior Height Rear Load Area	62½ inches
Length of Load Area	87½ inches
Interior Width Load Area	57 inches

Here's the newest, most economical walk-in delivery van you can buy—the sensational new 'Jeep' Fleetvan. Ideal for multi-stop delivery use! The Fleetvan parks easy. Maneuvers easy. New safety-designed front lets the driver see the road just a short way in front of the bumper. And the Fleetvan gives top gas economy too. These are just a few of the reasons the U. S. Post Office purchased over 6,000 'Jeep' Fleetvans. For full information on the 'Jeep' Fleetvan write to Mr. R. J. Kreusser, Fleet Sales Manager, Willys Motors, Inc., Toledo 1, Ohio.

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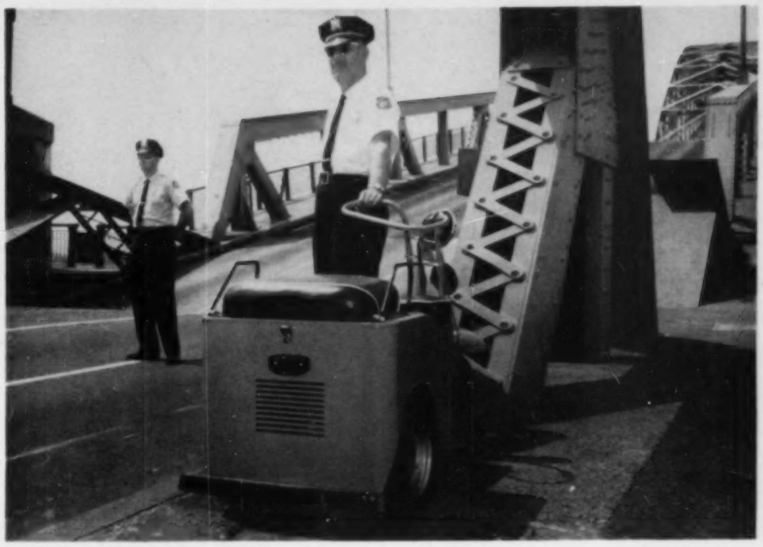


During bridge openings, police officers ride the electric units quickly to traffic-control points.

For Tight-Fit Bridge Traffic

By **CHIEF WILLIAM F. PARKER**
Burlington County Bridge Commission
Palmyra, N. J.

The ability of the light, three-wheeled vehicle to maneuver through crowded traffic to perform special police functions is being demonstrated at the Tacony-Palmyra Bridge in the Philadelphia metropolitan area.

The bridge, a mile-long, four-lane structure experiences an average of 50,000 vehicles a day, with peak week-end traffic concentration running as high as 65,000 a day.

Two electrically powered Cushman Trucksters help keep traffic interruptions at a minimum and shorten their duration.

Bridge openings are one such job. The center spans of the structure are of the bascule type and are opened frequently to allow passage of ocean-going vessels navigating the heavily commercialized Delaware River. Previously, a panel truck delivered bridge police to the center spans to control traffic during openings. In this service, the truck had to discharge two officers at the center of the bridge, then continue across to the opposite side and remain there with its driver, until the bridge was reopened. Then, it picked up the officers and returned to the bridge headquarters office.

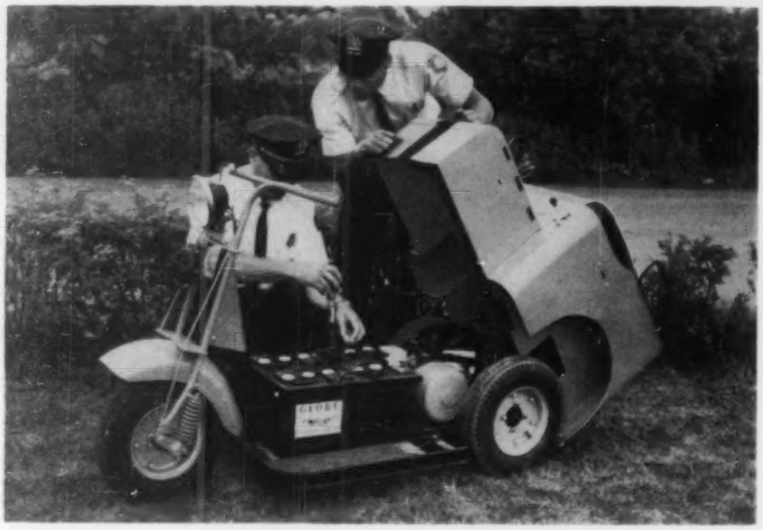
Now, using Trucksters, officers can ride to the center of the bridge on the walkways, park the vehicles in "turn-around" areas, and perform traffic control during openings. When they are finished the three-wheel vehicles are driven back down the walkways to the bridge garage.

The new electric vehicles also save additional time during lane switching. The bridge is equipped with lane lights, which allow bridge personnel to switch from the conventional "two-lanes-in-each-direction," to a three-and-one lane arrangement to accommodate heavy in-bound or out-bound traffic.

This job, again, previously required a truck which carried police officers to the pole-mounted switch boxes located at intervals on the bridge. The police trucks are equipped with loudspeakers to announce the lane changes, and must use the center driving lanes to accomplish the change. Since switch boxes are mounted on sidewalk poles, an officer had to leave the truck and cross a lane of heavy traffic to reach the switchbox. At the same time, the truck had to stop in traffic until the switch was completed and the officer returned. This process was repeated at the bridge's seven switch boxes.

(Continued on page 128)

A paint crew gets a fast ride to work on the little vehicles.



A tilt of the body provides access to the batteries.

(Continued from page 127)

Now, the truck and small vehicle operate as a team, paralleling each other out on the bridge—the truck operating in the center traffic lane announcing the lane change, and the Truckster on the walkway. At each switchbox, the officer on the sidewalk can quickly make the switch, requiring the truck to pause momentarily, before continuing to the next box.

Another periodic assignment handled by the three-wheel vehicle is speeding policemen to the site of bridge accidents. Operating on the walkways, each three-wheel vehicle can transport two officers directly to the scene of the accident, enabling them to more quickly re-establish traffic flow.

When a bridge truck was used for this service, it was necessary to park in the bridge traffic lanes, sometimes at a distance from the center of the accident. This caused delay in correcting the traffic stoppage, as well as adding to the general congestion.

The units also perform a variety of other duties such as transporting maintenance personnel and a full-time crew of painters to their work areas on the bridge. Tower men, located in the span's four towers, use the utility vehicles when changing shifts.

The three-wheel electrics have demonstrated their ability to maneuver in the close-quarters of the bridge walkways, since they require only 25 inches of passageway in which to operate and can turn in a radius of 70 inches.

Bridge personnel find that they can deliver up to 40 miles on one charge of their heavy-duty batteries. When recharging, the vehicles are plugged into a specially-installed 110-volt outlet. During the recharging process, the vehicles can be unattended, since they automatically turn off when reaching full charge. ◄◄

Cleveland Deodorizes Diesel Exhaust

Approximately two years ago the municipally owned Cleveland Transit System decided to do something about the exhaust gases being discharged from its fleet of buses. In combination with the General Motor Coach Division, Detroit Diesel, the Sindar Corporation, and the Rhodia Company, the transit system conducted tests for approximately one year, using masking agents to make the gases less irritating and objectionable. The tests were aimed at discovering whether such additives leave deposits in the engines that would create mechanical difficulties.

Cleveland Transit uses a high-grade diesel fuel that does not emit any visible exhaust smoke. The product used for the past three years is a kerosene or 508 end-point fuel with a .06 sulphur content.

At the conclusion of the test, the transit system researchers shipped the engines to Detroit Diesel for examination; their engineers and metallurgists gave the engines a clean bill of health. As a result, General Motors approved the use of the additive for use in their engines. The additive does not change the chemical structure of the exhaust gases; it only provides a perfume for masking odor that mixes with the emitted gases.

The masking materials used in the tests were Deodall No. 1 and Alamask D-12-K*. As a result of the tests, the Transit Board approved both products and currently is using Deodall to treat the fuel on a regular basis. The selection reflects a slightly lower price. Transit officials mix 75 gallons of the masking agent with 100,000 gallons of diesel fuel.

E. C. Krueger, manager of maintenance, reports very little public reaction to this move. However, he feels that the lack of reaction demonstrates the effectiveness of the measure, since the public is more likely to complain, rather than to acknowledge satisfaction with service. ◄◄

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* Deodall No. 1 is a product of the Sindar Corp., 321 West 44th St., New York 36, N. Y. Alamask D-12-K is produced by the Rhodia Co., Inc., 60 East 56th St., New York 22, N. Y.

PARKING CHECKER
ATH 290

Twin-Duals and meter-maids increase revenue in Seattle

The city of Seattle, Washington has been metered 100% with Rockwell Twin-Duals since 1957. Twin-Duals have withstood severe weather conditions in this coastal area remarkably well, thus cutting down maintenance costs. Checking and collection time have been reduced, too, resulting in labor savings. Attentive meter-maids have also helped boost revenue for the city. Since they went into action in 1957, the number of parking citations has increased substantially.

Seattle officials credit the Twin-Dual parking system with speeding traffic flow, by allowing an extra four feet for every motorist to enter or leave a parking space. For a free booklet, write: Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Company, 400 N. Lexington Avenue, Pittsburgh 8, Pa.

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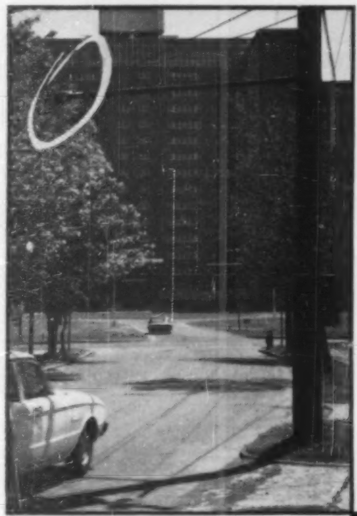
NEW DIRECTION/MOTION DETECTOR

CHEKAR® ultra-sonic vehicle detector recognizes difference between approaching and receding vehicles



The new CHEKAR® direction/motion detector (Type SVDM) is used with vehicle-actuated signals. It uses ultra-sonic (inaudible) sound waves to detect moving vehicles *approaching* actuated signals—at speeds as low as 4 mph—yet offers high immunity to *receding* vehicles which may enter the detection zone. You get maximum protection against false signal calls by departing vehicles.

LOW COST The Type SVDM vehicle detector is priced to compete with any overhead detector available.

SIMPLE INSTALLATION All components are mounted above ground. No special tools or meters required for installation or adjustment.

EASY MAINTENANCE Electronic circuits use only four tubes, all low-cost radio-TV types, obtainable anywhere. FCC licenses not required.

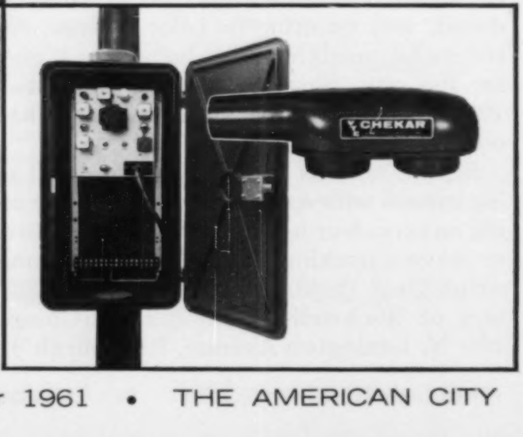
Mast-arm mounting provides detection for one or two adjacent traffic lanes. Vehicles stopped or parked in one lane do not interfere with detection of moving vehicles in other lane.

Side-fire mounting at roadside, usable in many locations, offers maximum installation economy. Provides detection up to two lanes out from curb—exact coverage depends on local conditions. (With side-fire detection, parking must be restricted near detector to avoid distorting ultra-sonic detection beam.)

CHEKAR Detectors for All Your Needs

Where motion detection does not meet your requirements — where you need vehicle detection down to a dead stop, or maximum resolution of closely-spaced vehicles—CHEKAR ultra-sonic *presence* detectors Types STD and SVDTare ideal. These performance-proven detectors, together with the new Type SVDM direction/motion detector, provide a selection that will meet practically any requirement. Ask for additional information.

Sensing unit has slip fitter for standard 2″ (2⅜″ O.D.) mast arm. Transceiver chassis mounts in weatherproof case, is plug-connected for easy installation and removal.

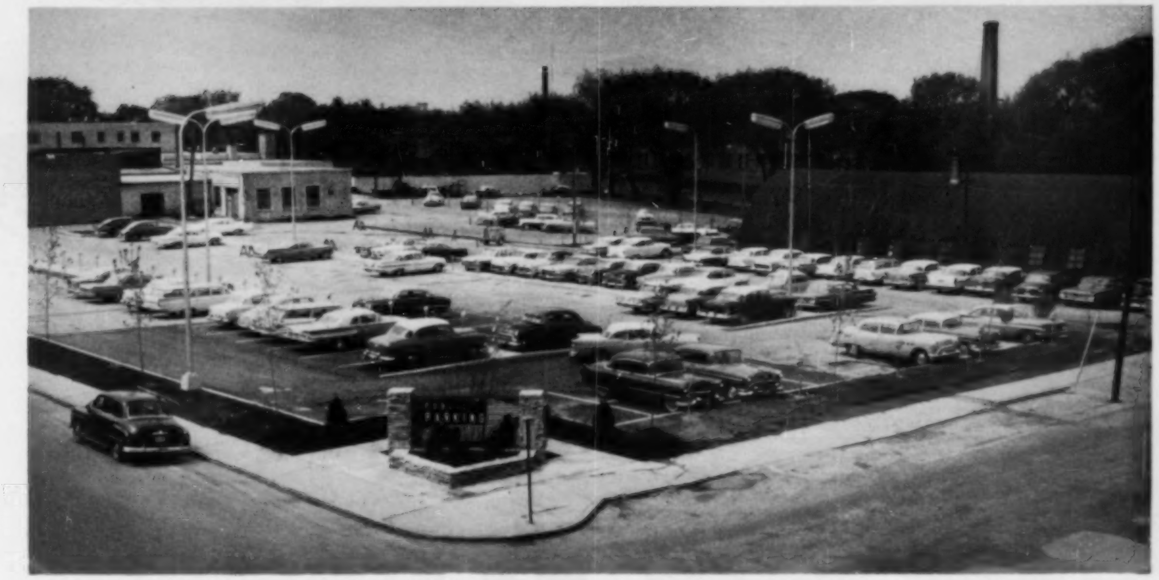


THE SOUND APPROACH TO VEHICLE DETECTION

VEHICLE TRAFFIC CONTROL DIVISION

GENERAL RAILWAY SIGNAL CO.
ROCHESTER 2, NEW YORK

3139



An attractive, money-making civic asset like this parking lot . . .

Fond du Lac's Self-Supporting Offstreet-Parking Program

. . . is the result of clearing away drab, tired-looking buildings like these.

The municipal parking system operated by Fond du Lac, Wis., has been a thrifty, self-supporting utility since it started in 1957. Income from parking fees pays all expenses including a payment to the city's general fund in lieu of taxes on the property. Moreover, the parking system now can retire $40,000 of bonded indebtedness ahead of schedule, if there is an advantage in doing so.

The demand for off-street parking is expected to grow in the city. A study by Carl L. Gardner & Associates, consultants to the Plan Commission, recommends that public parking spaces be increased from the existing 1,265 to 2,812 by 1980. The plan proposed a one-way traffic loop around the business district to expedite traffic circulation.

Under the present program, the city expects to expand facilities by stages, using revenues earned from the parking fields. A study showed that 70.5% of Fund du Lac's parkers walked less than 350 feet to their destinations.

Fond du Lac currently is reviewing meter rates throughout the parking-utility system. On the lot shown in the accompanying photograph, the city is testing four-hour meters instead of ten-hour meters used in the rest of the system. The high-demand spaces, those closest to the corner have the four-hour dial with a rate of 5 cents per hour. These meters take nickels and dimes, but not pennies. The rest of the meters charge 5 cents for two hours and accept nickels, dimes, and quarters, but not pennies. At curb space in the central business district, for the most part, meters have a time limit of one hour at a rate of 5 cents per hour.

Two maintenance men service the meters, emptying the coins into a Duncan Miller collection cart using a flexible hose from the meter to the box. ◄◄

NOW—three big features
in one compact meter...

MARK-TIME®

New Sentinel

PARKING METER

1. Save time checking meters!
   You can spot the bright red and white SENTINEL markings a long way off . . . from either side of the meter. It's the easiest of all parking meters for motorists and policemen to read and to check.
2. Save time on maintenance!
   Virtually all the servicing the SENTINEL will ever require can be done **on the street in a minute or two!** You don't need a Master Meter Mechanic . . . and the policeman doesn't waste a-minute-a-meter each week winding it to make it "automatic".
3. Save the receipts you collect!
   The self-locking, tamper-proof coin box is protected by a double thick, stainless steel door and a new solid wall of heavily reinforced No. 3 Zamac. It's the most secure of all parking meters! You'll find the new SENTINEL requires less time and money to maintain than any other meter. Less time for checking and collecting, too!

Write us today for full details.

VIOLATION
VIOLATION
COIN
COIN
TURN HANDLE
EACH COIN

Note to present Mark-Time single installations: You can use your present parts in the new SENTINEL. Mark-Time has intentionally not designed obsolescence into its excellent meters.

M. H. RHODES, INC.

HARTFORD 6, CONN.

In Canada—M. H. Rhodes (Canada) Ltd., Ottawa 5, Ontario

A Porcelain Guard Rail

This porcelain-white guard rail, the first in the nation, stays white and visible day and night.

A narrow bridge along a twisting country road near Pleasant Corners, Pa., has the nation's first porcelainized-steel guard rail. It combines the strength of steel with an attractive, highly reflective, maintenance-free coating of porcelain enamel. Bolted to steel posts attached to the bridge, the white rail glistens in the sunlight. At night the rail pops out of the darkness as soon as it reflects the beam of an approaching motorist's headlights. Protected by a ground coat and a porcelain-enamel cover coat similar to those of a kitchen range, this steel rail has a higher original cost than ordinary rail. Nevertheless, it offers compensating economics because it needs no paint and it washes clean in the rain. The 12-gauge guard rail was supplied by Bethlehem Steel's Lackawanna, N. Y., plant. The porcelain finish was applied by the Erie Enameling Company of Erie, Pa.

Curb Parking and Garages in Tokyo

Proceeds of about 238 million yen ($66,640,000) came from 3,050 parking meters to the city treasury of Tokyo between January 1959 and August 1960. Parking meters were installed in January 1959 at the city core. A charge of ten yen (there are 360 yen to the dollar) is made for each 15 minutes of parking and for overtime parking the regular charge is doubled. No parking charge is made for the hours 6 p.m. to 9 a.m. on weekdays or for Sundays and national holidays. Some 120 watchmen make their rounds to keep parking meters in good condition and to prevent overtime parking.

Cars that parked at random before the installation of parking meters no longer do so, driven out by the parking charge of ten yen. Not all curb-parking spaces are used by motorists.

Following is a comparison of the average parking time of a car and the average turnover of a curb-parking stall before and after parking meters:

Time of survey	Parking time per car minutes	Turnover of a parking space times per day
Five months before the erection of meters	77	4.7
Eight months after the erection of meters	41	9.3
Thirteen months after the erection of meters	45	10.3

Though curb-parking will increase by 1,700 in the coming two years, parking facilities in the form of underground parking garages and multi-story parking buildings are planned. When this is accomplished, it is expected that curb-parking will be abolished. This year, three underground parking garages accommodating 1,255 cars have been completed in the center of the city. Six more such garages are planned for the center of the city as well as two in outlying centers. The planned central garages will accommodate 2,720 cars and the two in the outlying centers 210 cars. All these will be completed by the opening of the Olympic Games in Tokyo in 1964—*From Tokyo Municipal News,* November 1960.

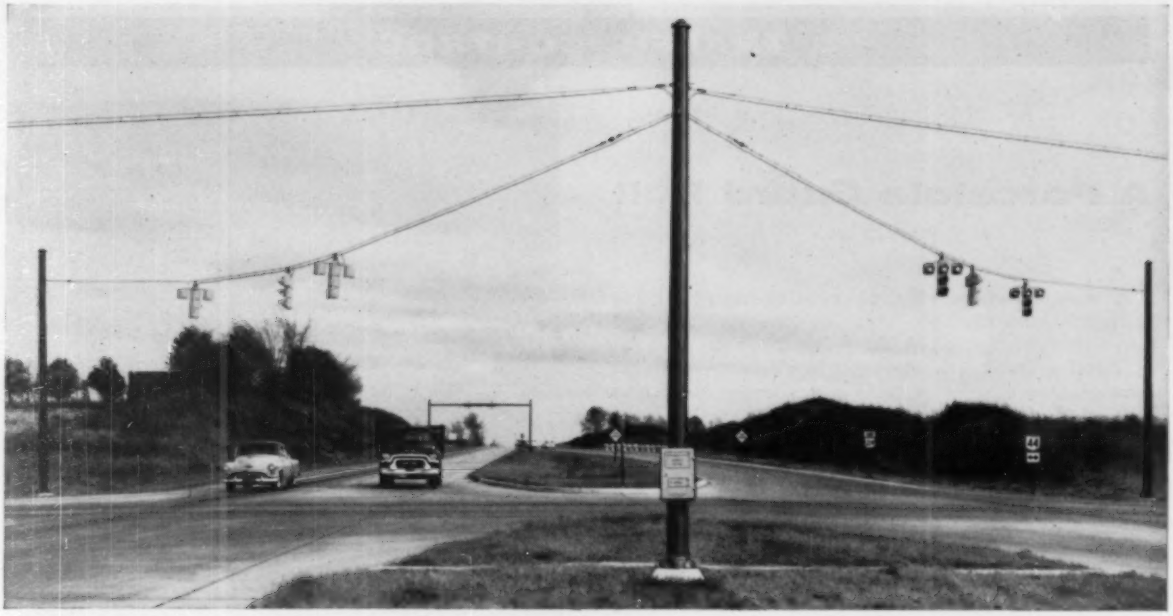
What San Francisco Thinks Of Monorail

So far, San Francisco's Bay Area Rapid Transit District has found no monorail system suitable for high-speed, regional mass transportation. At present, only one is in regular transit service, a 60-year-old suspended system at Wuppertal, Germany. The few others, such as the one at Disneyland and at the Dallas, Texas, state fair grounds serve chiefly as entertainment vehicles. None meets the minimum standards set by the district for planned Bay Area transit system.

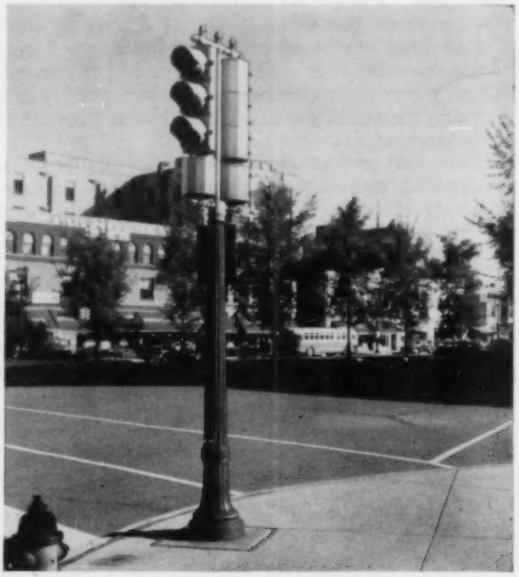
The system that the district plans to build must provide top speeds of 80 miles per hour and average speeds, including station stops, of 50 miles per hour. It must be able to transport 30,000 seated passengers per hour on each track with absolute safety. Its facilities must be pleasing, comfortable, and economical. The trains must operate with a minimum of noise and vibration.

Monorail systems fall into two general classifications: the "suspended" with the supporting rail overhead; and the "supported" with the trains riding above the rail. The suspended type requires supporting structures even where the trains could travel at ground level.

Currently, the district engineers have selected a "supported-duorail" system. This will permit more than 50 miles of the proposed 120-mile rail network to occupy surface tracks at substantial savings in costs. The design, however still remains open for any new developments which may appear. ◄◄

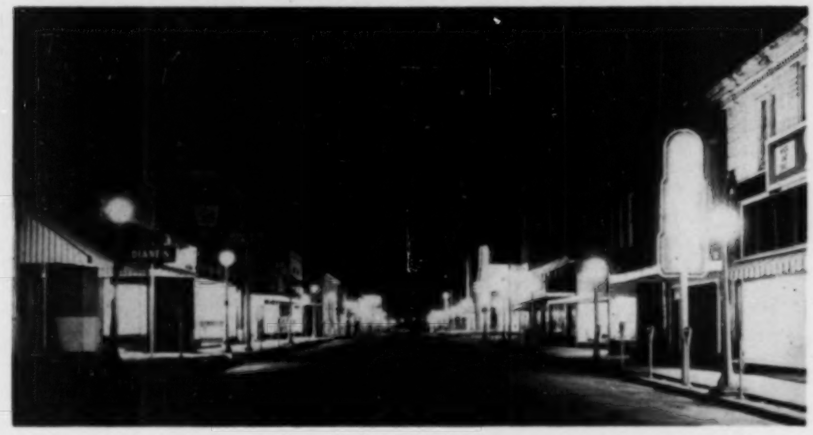


UNION METAL'S unmatched experience is readily available to help solve your signal support problems



UNION METAL
Traffic Signal Poles
CANTON 5, OHIO
BRAMPTON, ONTARIO, CANADA

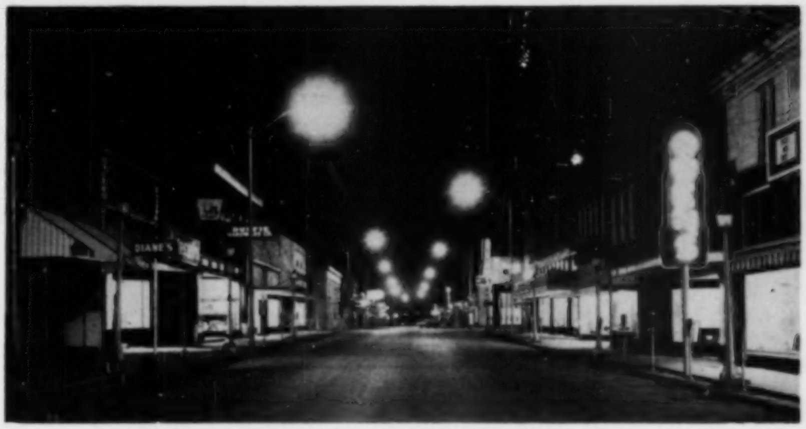
Steel or aluminum, plain round or fluted, Union Metal's broad range of traffic signal pole designs are long on economy and short on maintenance.



Before the mercuries went on, downtown Hope looked like this . . .

More Light For Hope

By **G. G. MEDDERS**
City Manager



. . . but now it has brightened up, with the power load reduced by 13%.

Hope, Ark., recently completed the installation of 83 new mercury-vapor lighting fixtures mounted on ornamental standards in the downtown section of the city. This is the first portion on a lighting project that will eventually include about 225 fixtures of this type.

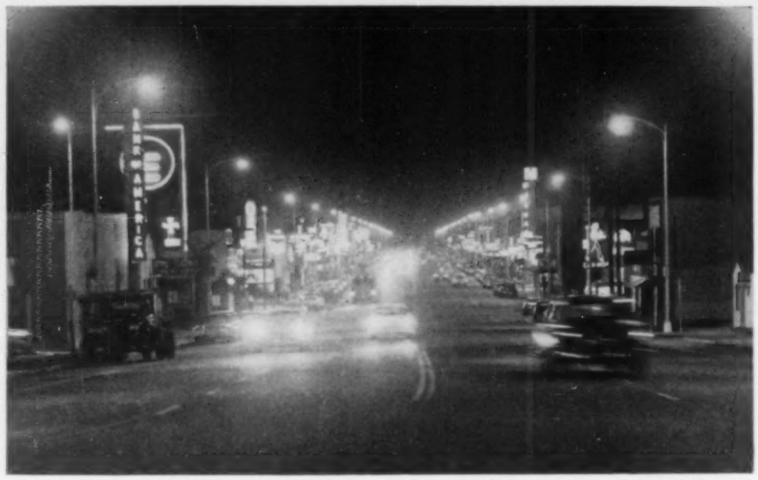
The fixtures are General Electric streamlined design mounted on Union Metal 30-foot standards using eight-foot mast arms, depending on the width of the streets. The light fixtures provide an output of 20,000 lumens each using the comparatively new 9,000-hour "bonus" lamp.

In 1926, the city installed 196 incandescent fixtures of 2,500 lumens each on ten-foot ornamental standards covering the then-developed downtown section. The standards were placed on each side of the streets at approximately 50-foot intervals. This provided a downtown lighting system which, at the time, was outstanding among small cities. The present project was designed to restore that distinction and will provide white-way lighting to all highways and major roads leading into the city.

It required 67 of the new mercury-vapor fixtures to light the area, which was covered by the 196 old incandescent fixtures. The total output of the 196 fixtures was 490,000 lumens. The 67 new mercury vapor fixtures will provide 1,340,000 lumens of output over the same area. This is approximately 2.75 times the total output of the old system. Due to the modern design which furnishes a better control of the light output, the effectiveness of the new system is nearly 400% more than that of the old incandescent system. The 196 incandescent fixtures amounted to a total load of 34 kilowatts. The reduction in total load is approximately 13%.

The next phase of the program has just been started by the Line Department and will include an additional 55 fixtures. All of the installation in the business section will be on ornamental standards. Other street and highway lighting will have mast arms mounted on creosote poles, due to the existence of a pole line on each of the streets planned for this type of lighting and also the heavy growth of trees along these streets which would destroy the effect of ornamental standards. The lighting along the highway will be spaced on alternate sides of the street at 100-foot intervals. Present plans are for the project to be completed during 1962. ◂◂

The Eloquence Of Good Street Lighting



The new mercury-vapor lamps on Grand Avenue.

The explosive growth of southern California, and particularly of San Diego County, has had its effect upon the prosperity and the problems of the City of Escondido. The increased population within the city limits—8,000 in 1952 to 15,000 at the end of 1959 — has compounded the complex problems of efficient city government. To add to these problems, the trading-area population of Escondido has increased from 1,600 persons in 1952 to more than 30,000 persons at the end of 1959.

Many municipal services must be available to the resident population of the incorporated city; and also for the use of the unincorporated-area population surrounding the city. Improvement and sustained maintenance of streets, the ever-increasing parking problem, control of traffic flow and traffic accidents, are only some of the many problems. A new sewage-disposal plant to accommodate a population of 50,000, forty-four annexations of the City of Escondido since 1952, improved water-distribution system and adequate planning for development of future water systems, a major drainage and flood-control project, many subdivisions, and engineering street lighting have been some of the problems faced by the engineering department. They had to be solved.

Of all our problems street-lighting improvement has had the most eloquent effect upon the city. For street-lighting improvement is one of the few assets of a city that is immediately evident—and usually appreciated by its residents. Nearly all of the "out-of-sight" improvements are taken for granted.

Start and Progress

Improvement of street lighting in Escondido to meet optimum standards actually commenced in 1955. In December of that year, 52 units of 20,000 lumens each were installed. This project was financed through the formation, by property owners, of an improvement district serving eight business blocks; the installation cost $24,057. The standards were supplied by the Union Metal Mfg. Co., Canton, Ohio and the luminaires were General Electric, equipped with 20,000-lumen, 400-watt, mercury-vapor lamps. The City of Escondido provides the energy, through the San Diego Gas and Electric Co., at a monthly cost of $8.61 per unit. This first improvement involved Grand Avenue which is the main street of the central business district.

This important project was almost immediately followed, in 1956, by installation of thirty-nine identical units on a major cross street and served seven city blocks. The cost of this installation was $22,222. In 1957, one hundred and two 20,000-lumen lights were installed to serve 21 city blocks at a cost of $78,477; and in 1958, twenty-five identical units were completed, serving four additional city blocks of commercial property at a cost of $24,462.

The next major street-lighting improvement was completed in 1959 by installation of forty-five lighting units serving seven city blocks, at a cost of $35,410. This project was coupled with a major boulevard widening and improvement in an area that, heretofore, had not been seriously considered as commercial area other than as a possibility for some uncertain future.

Almost immediately this boulevard improvement, which serves an adjacent large new subdivision area, was responsible for encouraging an additional annexation involving one mile of the same boulevard. Included in the plans for the development of this additional area are 64 lighting units of 20,000 lumens each at a cost of $80,000.

Between 1955 and 1959 a total of two hundred and sixty-three 20,000-lumen, mercury-vapor street lights were installed at a cost of $184,628. And 64 identical lights bring the total number to 327 and the total cost to $264,000.

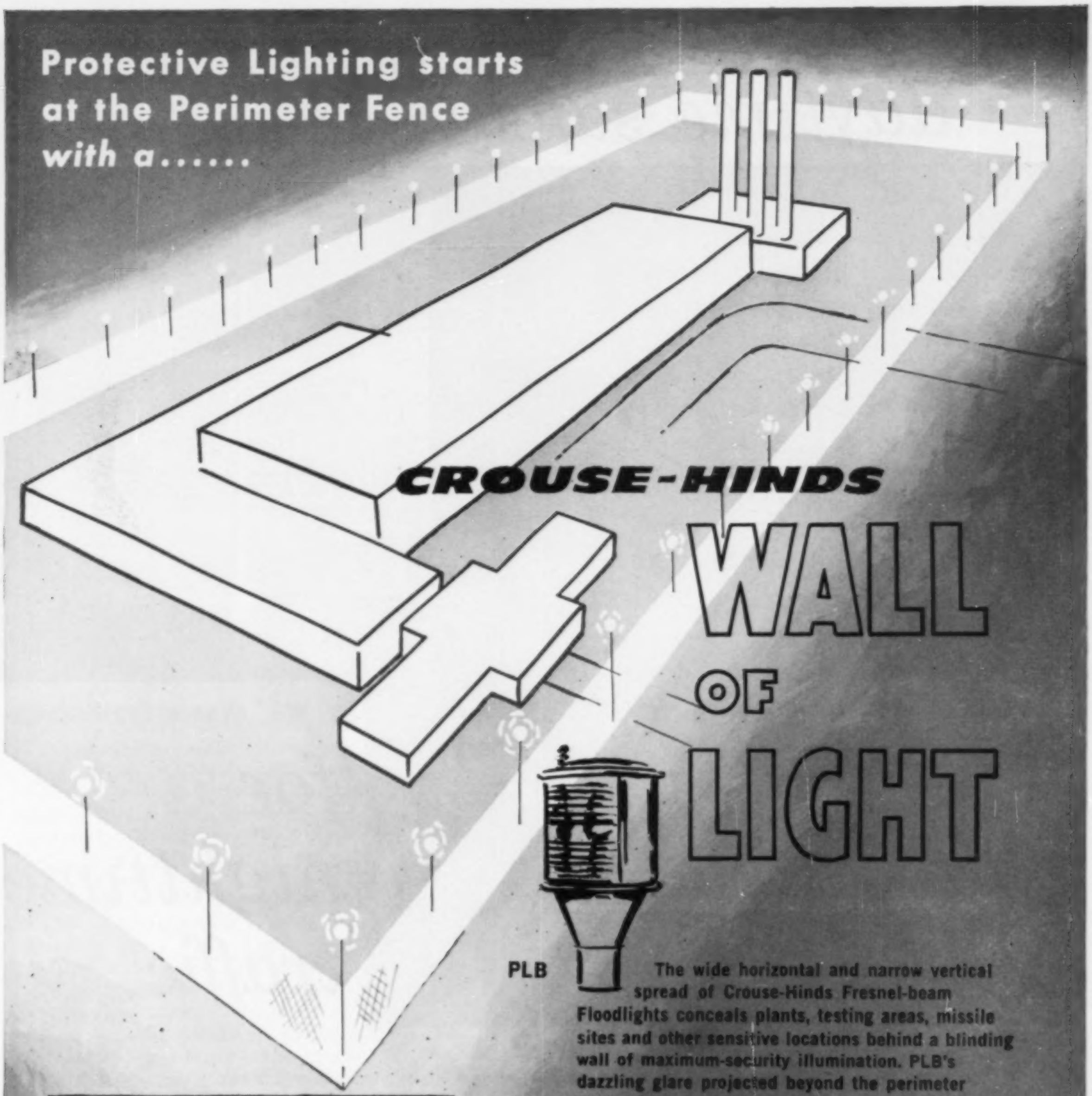
Presently a new district is being created to provide an additional 61 20,000-lumen mercury-vapor luminaires on a major street which is being completely rebuilt and improved.

The entire improvement was planned by the city manager's office and the city engineering department. The programs were initiated and paid for by the property owners whose immediate property is benefitted. The city underwrote an annual energy cost of $31,780.

Another phase of street-lighting renovation and improvement involved the entire residential area.

(Continued on page 139)

Protective Lighting starts at the Perimeter Fence *with a......*



CROUSE-HINDS WALL OF LIGHT

PLB

The wide horizontal and narrow vertical spread of Crouse-Hinds Fresnel-beam Floodlights conceals plants, testing areas, missile sites and other sensitive locations behind a blinding wall of maximum-security illumination. PLB's dazzling glare projected beyond the perimeter fence clearly outlines all movement on the approaches, yet obscures guard, patrol and other activity on plant property.

Modified beams conform to land contours. No shadows. No blind spots. Multiple and series types afford economical current distribution for varying line lengths. A range of sizes, wattages and foot-candles satisfy all plant-geometry and topographical requirements.

ADE and MVE Productive-Area Floodlights turn Nighttime into Day

ADE
incandescent

MVE
mercury-vapor

Whether you need incandescent ADE or mercury-vapor MVE lights for your plant or building areas depends on hours of burning, relamping difficulties and labor costs. Whatever your requirements, wide or narrow beam, short or long range, Crouse-Hinds has a highly-efficient, heavy-duty projector especially for the job.

For detailed information call your Crouse-Hinds distributor or ask for Floodlight Catalog No. 2714.

CROUSE HINDS

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daytime safety

Middle Belt Rd
EXIT 1 MILE
Metropolitan Airport
Merriman Rd

Middle Belt Rd
EXIT 1 MILE
Metropolitan Airport
Merriman Rd

for nighttime traffic

Traffic is heavy night and day on this highway near Detroit, and the exit shown above feeds two busy arteries. The installation of Millerbernd standards with high-intensity luminaires provides brilliant illumination, not only for the overhead and roadside signs, but also for the roadways themselves. Traffic flows smoothly and safely at all hours.

The Millerbernd davit-type standards in the photo have an integral mastarm. An unusual feature is the tubular extension which will accommodate either mercury vapor, incandescent or fluorescent luminaires.

Millerbernd standards offer many advantages in design, strength, ease of installation and maintenance. Wide range of models available for highways, boulevards, streets, parking lots and building approaches.

Write for Booklet OTB

Millerbernd *lighting standards*

MILLERBERND MANUFACTURING CO. WINSTED, MINNESOTA

A leading national producer of modern lighting equipment since 1946

This area comprised the original city development as well as the rather recently annexed and subdivided additions. The first overhead street lights were sparsely located and of 1,000-lumen intensity. Subsequently these were augmented with 2,500-lumen lights and, between 1945 and 1955, a few 4,000-lumen lights were installed.

Residential Areas

At the same time that substantial street-lighting improvements were initiated for the business district, our office determined upon a policy of badly needed street renovation and adequate street lighting for the entire residential area. An engineering study recommended a three-phase progressive program which increased all residential overhead lights to 6,000-lumen intensity. The first phase was classified as urgent, the second as important, and the third phase as recommended. The urgent group of 109 lights were completed during 1960, the important group of 43 lights is going forward now, and the third group of 54 lights will be completed next year. These residential-district, 6,000-lumen lights were installed by the San Diego Gas and Electric Co. and the energy is paid for by the city. Escondido pays $17,760 for energy to serve the completed residential street-lighting program.

The benefits, to the entire community, resulting from the major-business-district street-lighting improvements have been many. First, the property owners and merchants responded, voluntarily, by redecorating and modernizing a large portion of the store fronts in the central shopping district.

G. H. P. Dellman, the designing engineer, says that, in his opinion, the business-district lighting in Escondido is superior to that of any other comparable business district.

Accidents and Crime Down

The Police Department reports that the improved street lighting in the business district has increased traffic safety and served as a crime deterrent. For the past few years Escondido has received the Pedestrian Traffic Safety Award from the National Traffic Safety Council, having no fatalities or serious injury accidents. The brilliant all-night downtown illumination has reduced the incidence of burglary to a minimum.

LLOYD MITCHELL
City Manager

Downtown Is Safer and Business Is Better

Redwood City, Calif., is earning a double set of dividends by brightening its downtown area. Chief of Police William Faulstich points out that the new lighting makes police protection easier and traffic less hazardous. During the critical periods beginning after midnight, his patrolmen can see into doorways now from a patrol car instead of having to get out and investigate on foot. Pedestrian safety also is better. It used to be dangerous to cross the street after dark, especially on a rainy night. Now pedestrians are plainly visible under such conditions.

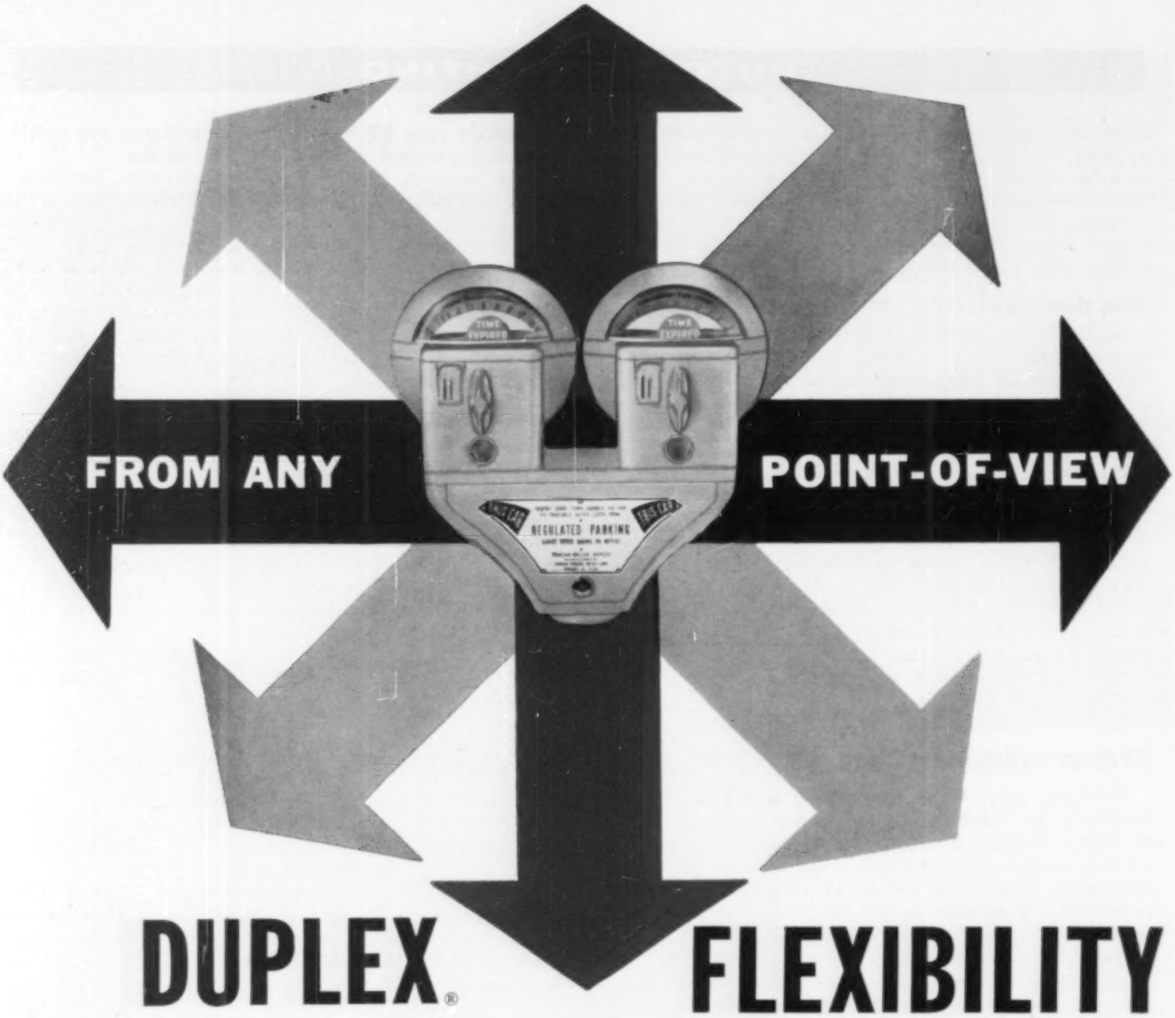
The new whiteway was designed by the city engineering department. The choice of the new lighting system was the result of cooperation between city officials and merchants. The city's desire for more efficient light on the street led to an exhaustive technical analysis of lighting requirements and equipment.

To supplement the engineering review, the citizen's committee responsible for the project visited various Bay Area cities, examining their lighting installations. The group took along cloth swatches from a local clothing store, compared the color qualities under different varieties of lighting, and chose General Electric color-improved mercury-vapor lighting.

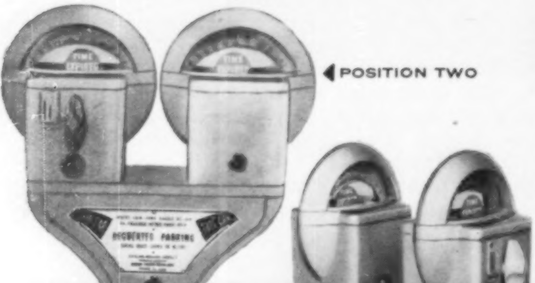
Redwood City, which owns and maintains its street-lighting equipment, ordered G-E Type M-1000 luminaires, utilizing a 1,000-watt mercury-vapor lamp burning at 700 watts, or 34,000 lumens. These maintain seven to eight footcandles of illumination on the street. The use of 1,000-watt lamps connected for only 700 foot watts is an economy feature. It gives ample light and prolongs the life of each lamp, since they burn at the lower intensity. The units are mounted 30 feet above the street, extending out six feet. The davit poles are opposite, spaced approximately 100 feet apart. The lights are wired in two series circuits. One group operates until midnight; the other, all night.

The city paid 25% of the $40,000 plus installation cost; property owners paid the remaining 75%. ◄◄

The street-lighting system in Redwood City is color-improved.


FROM ANY
POINT-OF-VIEW
TIME EXPIRED
REGULATED PARKING

DUPLEX® FLEXIBILITY IS UNEQUALLED!


POSITION TWO
POSITION THREE

Versatile Duncan Duplex provides proper facing positions for *positive* meter identification regardless of the method of parking.

Eliminates motorists *confusion* and loss of good-will prevalent with ordinary double or twin meters.

Available in a wide range of time and rate combinations utilizing pennies, nickels, dimes, quarters and good-will tokens to meet *all* curb and off-street parking requirements.

DUNCAN PARKING METER
Division of NAUTEC Corporation
835 NO. WOOD STREET • CHICAGO 22, ILLINOIS

To the casual observer, this palm-lined street looked romantic in the evening dark but to residents it looked only like a black cave, dangerous to them and to their children.

The Residents Asked and Were Willing to Pay

Marguerita Avenue is a typical residential street in the older north side of Santa Monica, Calif. (population 86,000) where property assessments are relatively high. Large, green and beautiful palm trees line the street and provide virtually a covered drive for many blocks.

However, Marguerita Avenue is atypical in one respect. For the first time in the modern memory of Santa Monica, a group of citizens sought residential street lighting and expressed willingness to assume the burden of cost.

The palm trees caused the action. While beautiful, by day, they turn Marguerita Avenue into a black cave at night. Street lighting located only at intersections provides little relief through the thick foliage.

Residents of Marguerita Avenue became disturbed over the darkness on their street and sought to rectify the situation. The city engineering department studied the problem and recommended the installation of ten Marbelite 42-D-6 standards in the three-block section under study. The engineers proposed General Electric Type R, Type III luminaires, using 4000 L lamps, to be mounted 21 feet high on a six-foot mast arm. They also recommended that the ten standards be situated 116 feet apart on a staggered basis, i.e., 232 feet between standards on one side of the street. The total frontage in the three blocks amounted to 2,317 feet. The result of this installation will be .20 footcandle at ground level.

Cost estimated disclosed that construction would total $7,350, with engineering and incidental expenses amounting to $1,150. Thus, the total project will cost $8,500 or $3.67 per front foot.

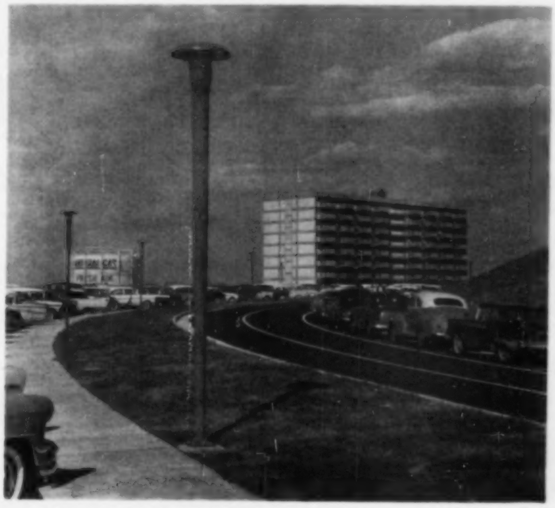
The property owners felt this was a bargain price for the protection of themselves and their children, as well as for the night beautification of Marguerita Avenue. Proceeding under the provisions of California's 1911 Improvement Act, which permits public improvements on an assessment basis, the owners circulated a petition, obtained sufficient signatures, and obtained City Council approval.

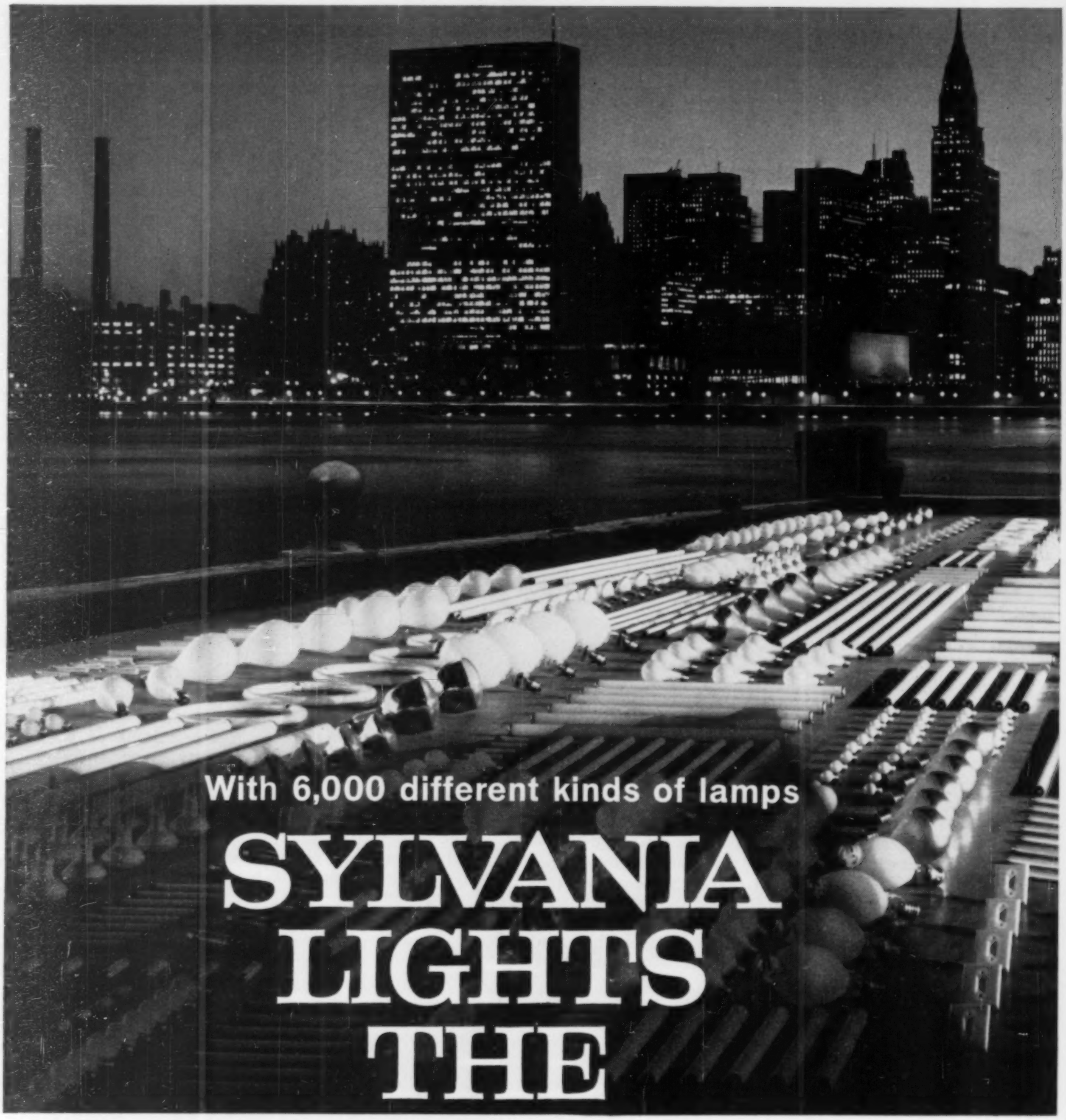
The residents of Marguerita Avenue are an outstanding example of progressive citizen action in times when such action is sorely needed in all walks of American life.

Russell D. Jones
Senior Administrative Assistant
Santa Monica, Calif.

Tennesse Tries New Pedestal Lighting Pole

Lining the parking area for the State Capitol in downtown Nashville, Tenn., are 60 new contemporary lighting standards. In this graceful design, the usual taper has been reversed for a striking, modern effect. The designers recommend it for small parking areas, parks, campus areas, driveways and general lighting. Its design accents corners and curves in the road and illuminates entrances for picturesque effects. It is available in lengths from 10 to 14 feet in both octagonal steel and aluminum and round aluminum, and is produced by Kerrigan Iron Works, Nashville, Tenn. Clarke and Rapuano were landscape architects for this project. ◄◄





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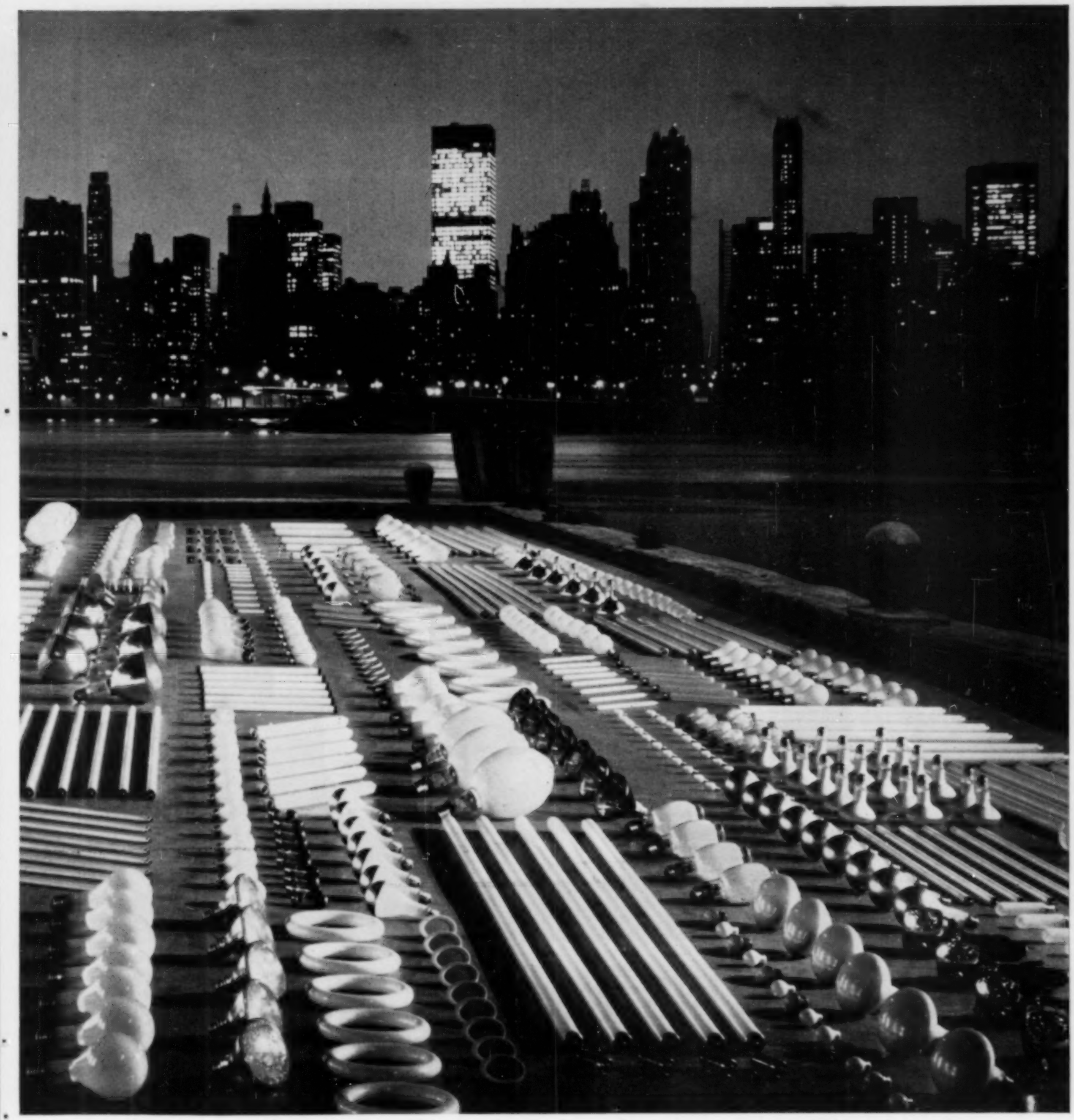
At Sylvania we're in friendly competition with the sun. For more than 59 years we've made it our business to push back the darkness and bring in the light.

Today, we make more than 6,000 different kinds of lamps to serve the world's growing and almost unlimited needs for light.

Just consider our family of fluorescent lamps, for example. Back in 1938, Sylvania brought fluorescent lighting to the market. In the intervening years we've pioneered more than a dozen major improvements in fluorescent lighting. Recently we introduced a VHO Powertube fluorescent that gives more light than a lighthouse. Our latest is a new "Natural White," the first fluorescent to make colors look real and truly lifelike.

Tomorrow, we'll have *hundreds* of new Sylvania lamps to show you. If you need lamps that are better, brighter, or more economical, see Sylvania. Wherever there is darkness – there is a Sylvania lamp to light the way.



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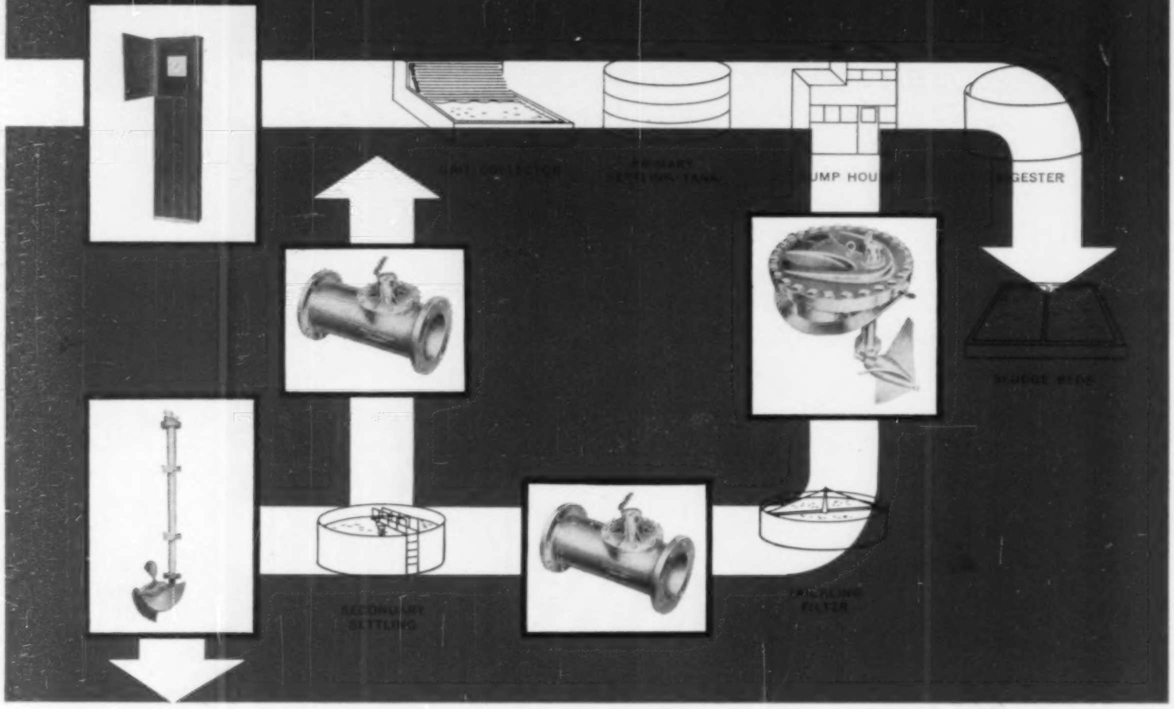

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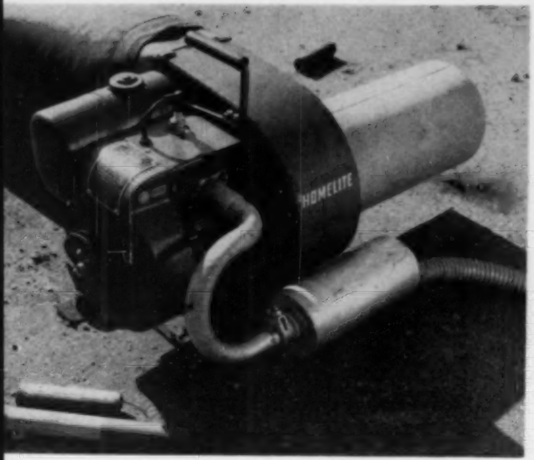
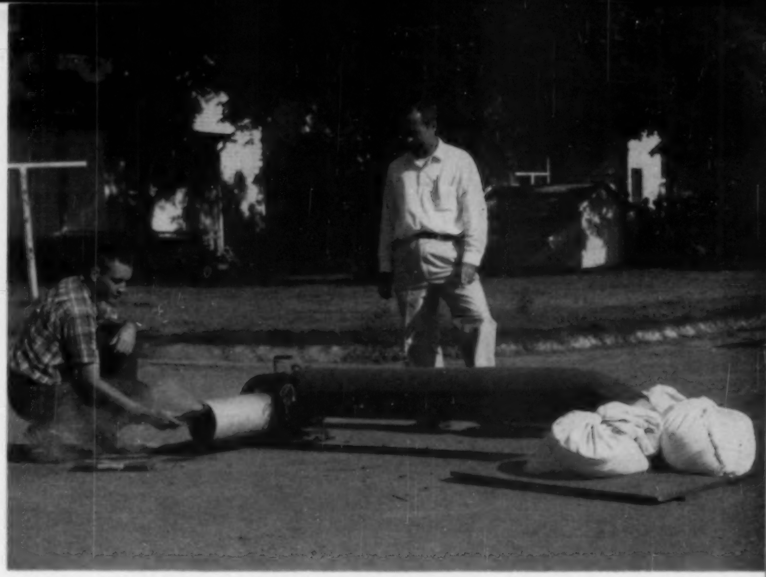


Two basic ingredients for a smoke test—a portable blower and smoke bombs.



Author Stacy looks on as an assistant places an ignited smoke bomb in the suction inlet of the blower.

"Smoke Out" Those Sewer Leaks

McPherson, Kan., employs smoke bombs and a portable blower to reduce infiltration

By **CHARLES E. STACY**
City Engineer

Smoke proved to be our biggest ally when it came to finding sewer leaks. Excessive infiltration was the problem, and to find the sources of this infiltration we tried walking the lines after heavy flows to find evidence of leaks, raised manholes above high-water elevation, and replaced old covers with new ones. Results were fair, but far from what we were looking for.

Next we checked for cross connections between sanitary and storm sewers by using a Navy dye. The procedure consisted of plugging the downstream end of a storm sewer and then filling the sewer with a water and dye mixture. This proved costly in both time and money, and of little value in solving our problem.

At this stage we discussed the situation with the consulting engineering firm of Servis, Van Doren and Hazard, Topeka, and learned that smoke was used successfully in testing sewers at Forbes Air Force Base.

Our equipment costs less than $275 to purchase and consists of:

- **A Homelite Model 20B, 1,500 cfm portable blower.**
- **One eight-inch elbow and six feet of eight-inch-diameter canvas air duct with draw strings on each end.**
- **A three-foot-square sheet of ¾-inch plyboard.**
- **One three-foot-square-by-¾-inch-thick sheet of sponge rubber.**
- **Pieces of rubber rug pad and several sand bags.**
- **Several dozen three-minute and five-minute smoke bombs. These we secured from the Superior Signal Company, Inc., 6 Colfax Street, South River, N. J.**

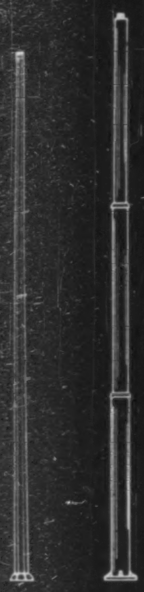
Two men with a pick-up truck and the above equipment make an effective leak-detection team. The blower is first connected to a manhole by means of the elbow and canvas duct, using the plyboard and sponge-rubber sheet to seal the opening. The rubber rug pads are used to block the flow of air at the next upper and lower manholes. The blower is then started and an ignited smoke bomb placed in the suction line. Within a few minutes the smoke will escape from the sewer line and appear on the ground surface, passing through any small hole or crack created by the infiltration of surface water into the line. We expose the sewer line at these locations and in most cases find the leak within a few feet of where the smoke appeared on the ground.

We have over 60 miles of sanitary sewers in McPherson, and to date we have tested over seven miles and found 27 leaks. Ten of these were on large mains and have been repaired. This reduced our influent at the plant to only 1.6 mgd after a two-inch rainfall, whereas formerly a similar rain resulted in flows of up to 3.0 mgd.

We find the most common leaks result from poor joints, poorly constructed manholes, complete breaks in the line, abandoned connections left uncapped, and roof drains connected to the sanitary sewer.

Our smoking and repairing program is a success, and we feel that it will forestall construction of a new disposal plant at least several years. By reducing the amount of infiltration we have also improved the degree of treatment provided by the plant, which was designed to serve a population of 11,000 people. (Our 1960 population was 9,996).

The smoke test is a proven leak finder. We feel it should also be considered as a test for new lines before the backfilling operation starts. ◄◄



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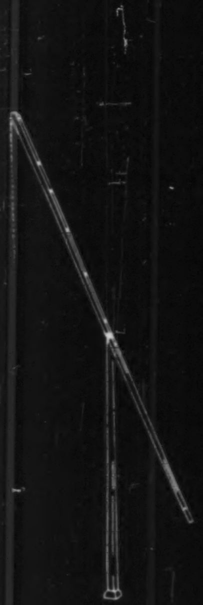

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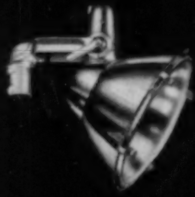

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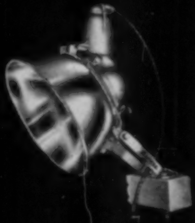

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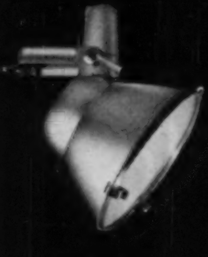

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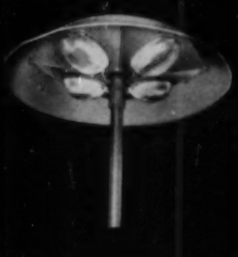

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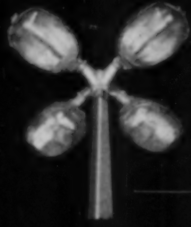

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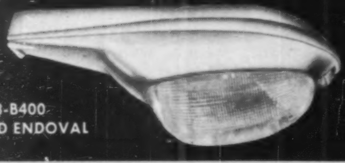

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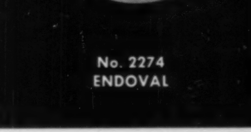

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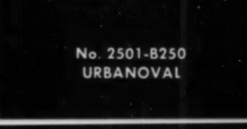

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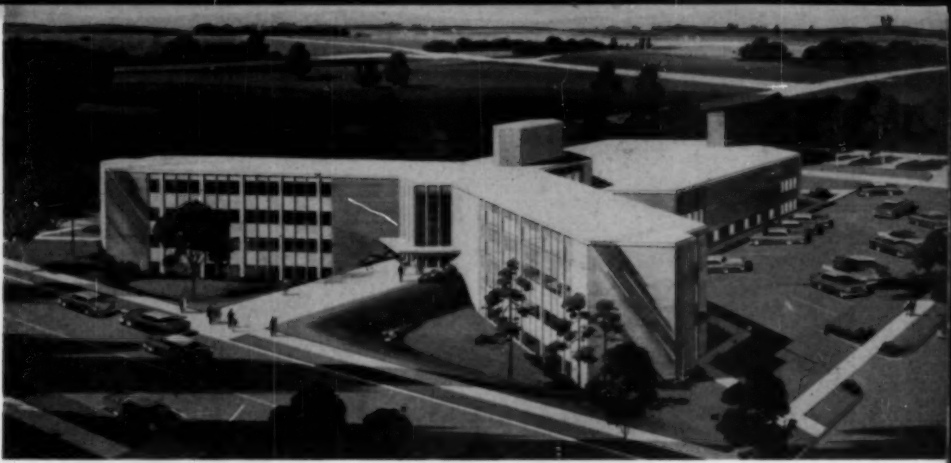


"Y," The Difference

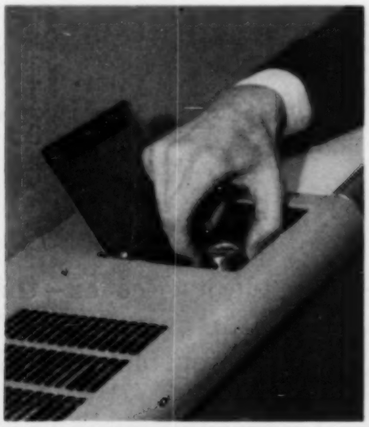
The striking appearance of Dunn County's courthouse is the result of logical design

By **HOWARD THEDINGA,** Chairman, Bldg. Committee
Dunn County Board of Supervisors, Menomonie, Wis.

The eye-catching Y shape of the new million-dollar Dunn County courthouse in Menomonie, Wis., represents no effort to be different; instead logic and functional considerations dictated selection. The layout improves traffic flow inside the building and permits ample parking areas convenient to heavily traveled sections inside the building. Construction costs ($18.24 a square foot) compare favorably with conventional design. Moreover, the building's plan permits substantially lower air-conditioning operating costs.

The new courthouse is on a block-square park near the heart of Menomonie's business district. The building exterior is tan brick, with Italian travertine marble in the hallways and other public areas. Heavy-traffic areas have terrazzo floors; others have asphalt tile. Offices are finished in plaster; courtrooms in wood and brick.

Corridor doors have slots cut in transoms to let cool air move from perimeter office areas into the corridor and then to exhaust systems. Additional heat in winter is supplied by convection units in the hallway.



The thermostat gives precise temperature control of fan-coil units in each perimeter office. In summer, 47-degree water circulates through the units; in winter the water is heated to 120 degrees.

The three wings of the Y radiate from a central core. This core area contains lobby space, elevator entrances and air-conditioning exhaust ducts. The three main entrances on the first floor open directly into the lobby area. In addition, there are entrances at the end of each wing.

The south wing, or trunk, is two stories high. On the first floor this section contains the courtrooms, registrar's office, jury room, judges' chambers, court reporter's room and legal library. The two six-sided courtrooms dominate this portion of the building.

Each courtroom has its own air-conditioning with individual Minneapolis-Honeywell thermostatic control. Overhead fixtures, controlled by a low-voltage relay switch, light the rooms; separate switches determine which individual lights will be turned on by the relay.

The other two wings of the building, which extend northeast and northwest from the central core, have perimeter office areas along the north-facing wall; next a series of windowless interior offices, then a corridor along the south wall.

The design and the building's location mean that the courthouse can use an unusual air-conditioning system. Because two wings angle to the northeast and northwest, they receive less heat from the sun in summer, reducing the cooling load. And the wings get less exposure to

(Continued on page 149)

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(Continued from page 147)

the prevailing north winds during winter, reducing heating requirements. These north walls have large windows, while windows in the south-facing walls are small. Vertical blinds screen the hot sun. The trunk, with walls facing east, south and west, has minimum window area to reduce heat gain during summer, heat loss in winter.

In the wings temperature-controlled air feeds into perimeter office areas. Cool air from these offices flows into the interior areas through undercut doors. Through a slot in the transom, the warmest air goes from the interior offices to the corridor, then to the exhaust ducts in the central core. While the air flow is continuous, the movement is so gentle there are no drafts.

In addition, perimeter offices have individual thermostats so the people can dial the temperatures they want. Unitrane fan-coil units either heat or cool air in the room to the desired temperature. These units are fitted with three-speed fans and Honeywell thermostats to regulate air quantity and temperature.

The building's air-conditioning is automatically controlled by outdoor thermostats: as the temperature falls, the system goes on heat; as the temperature rises, the system switches back to cooling. Because it is possible for one area to need heat while another area of the same building needs cooling (for example, afternoon of a fall day) the different portions of the building have separate control systems, giving completely flexible operation.

Building architects were Carl W. Schubert and Associates, Inc., of LaCrosse, Wis., and Eckert and Carlson of Winona, Minn.; the mechanical engineer was A. H. Kaulfuss of LaCrosse. ◄◄

Crime Index

The Crime Index for 1960 recorded a 12% increase in serious crime in the United States over 1959 according to reports received from the police in cities over 25,000 population. While the Crime Index deals with selected offenses known to the police, including those in which no arrests are made, a separate annual report of persons arrested is forwarded to the FBI disclosing the number of people taken into custody for all types of violations, not just those included in the Crime Index. These arrest data show that there was an increase of 3% in arrests, 1960 over 1959. ◄◄

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are carefully laid out. The Effective Sizes and Uniformity coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

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of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel

supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

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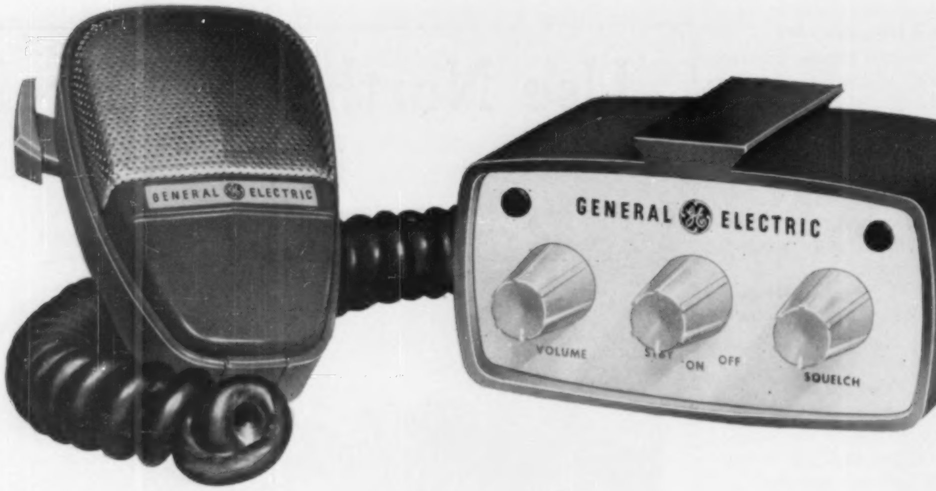
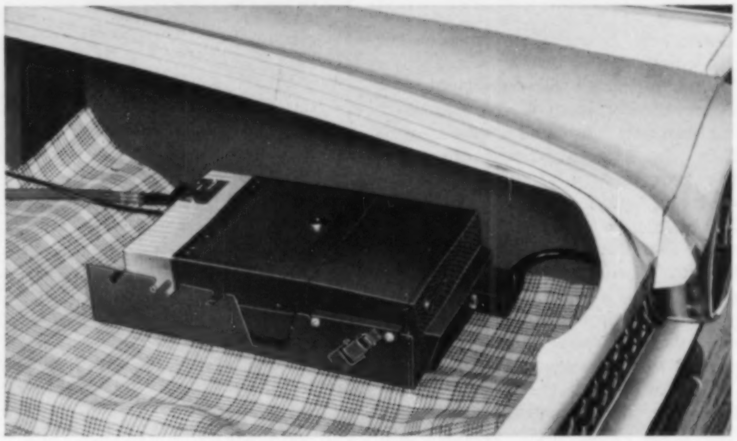


NEW COMPACT CONTROL UNIT

ADDS MORE FLEXIBILITY TO GENERAL ELECTRIC'S TRANSISTORIZED PROGRESS LINE TWO-WAY RADIO



The new design control head—half the size of previous control units — literally disappears under the dash—and you tuck the entire TPL radio unit into a corner of your car trunk.

This means a Transistorized Progress Line radio can be mounted wherever you like — under the dashboard, where its small size (9" x 15" x 4") allows ideal installation in most cars; or back in the trunk, where it takes little away from your cargo space.

The compact new control head is small enough to fit in your palm, and can be mounted closer to the driver than previously possible.

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GENERAL ELECTRIC

The City Tells Its Story

Edited by PAN DODD EIMON

Municipal
Public
Relations

Dearborn's Information Office Makes High-Glamor, Low-Cost Movie

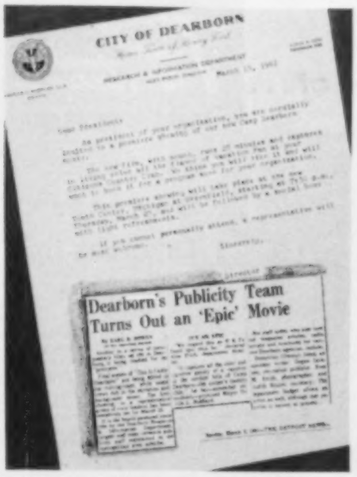
The city of Dearborn, Mich., has pointed the way for cities to produce promotional films with maximum impact and minimum cost. Dearborn's recent "epic"—a 27-minute sound-and-color motion picture about the city's Camp Dearborn, "a citizen country club"—has received rave notices from citizens and community leaders. The movie's cost to the city: under $650.

Not only is the production of top professional quality. So was the launching which took place with beauty queens, floodlights, newspaper publicity, and a gala premiere. The whole project has the quality which has earned an international reputation for Dearborn's municipal public relations office, the Department of Research & Information.

Dearborn began developing audio-visual reports several years ago. Its first effort was a slide program to which music and narration were added. In 1954, Research & Information made its first film. Three films, all documenting life in Dearborn for citizen use, have been produced in the last four years.

According to Alex Pilch, director of the public-relations office, the "mechanics and techniques have been basically the same in all cases. Writing and narrating assignments have been rotated among the staff." Director Pilch wrote the new movie, "This Is Camp Dearborn." Staff member D. James Jones was the associate producer; Doyne Jackson the photographer; Ross Smith the photographic consultant.

This crew shot 3,200 feet of film, edited it to 1,200 feet for the 27-minute show. A Bell & Howell camera, owned by the city's recreation department, was used for filming. A tape-recorder has long been standard equipment for the department. Music was selected from the public domain. A city-hall office was temporarily cleared for use by the movie-makers as a sound studio. A projector is drawn from the audio-visual department of the city library for use when needed.



CITY OF DEARBORN

Dearborn's Publicity Team Turns Out an 'Epic' Movie

This letter with the reprint of a newspaper story went to presidents of local organizations and citizen leaders in Dearborn, Mich., to launch the city's documentary movie, "This Is Camp Dearborn." The premiere was well attended and resulted in a rush of bookings for the film.

Cost

At approximately $10 per 100-foot roll of film (16-mm color), $320 was spent on this item. Research & Information used another $324.58 for laboratory work which included one copy, magnetic striping, optical effects, photography of titles, and art work on the titles.

Salaries are not added in the cost. All the movie-makers were on the city payroll and, according to Mr. Pilch, "we just sandwiched in this work with other projects."

Actors in the film were citizens photographed in or using Camp Dearborn facilities: boys round a camp fire, a family picnicking, etc. For staged shots, city employees doubled as models.

A movie, the city's public relations office knows, "no matter how well done, is not of much value unless people see it." Dearborn's "merchandising" campaign was kicked off with a feature story in the *Detroit News*, on March 5. This article was then partially reproduced in a March 15 letter inviting 280 presidents of local organizations and civic leaders to preview the new motion picture.

Titled the "Presidential Premiere," the showing was enthusiastically attended. Booking cards and literature were distributed at the showing. Thirty-three groups signed up for their members to see the film, then and there. City Council President Ralph B. Guy and other city officials were on hand to praise and listen to reaction. The reigning Mrs. City Beautiful and Miss Camp Dearborn added glamor to the occasion.

Another promotional preview—a luncheon for press, radio, and TV people—was staged by R & I.

Some indication of just how well the press played its information role is the picture feature which appeared in the *Dearborn Press*. Entitled "They Were There at the Camp Film Preview," the pictures show a previewer being offered a cup of coffee. The cut-lines, "Coffee Break—Over 150 club presidents and other guests were served refreshments following the premiere showing of the new city-produced movie, 'This Is Camp Dearborn,' Thursday at the Youth Center.

(Continued on page 152)

(Continued from page 151)

Here, Walter Domino, president-elect of Civitan and a recreation commissioner, gets first-class service from Beatrice Ryan of the Recreation Department."

Another picture of two men in conversation provides this information: "Book Talk—Leo Duvall, representing the Dearborn Exchange Club and Milton Lee Clark of the Fort Dearborn Manor Association, discuss the possibility of booking the 27-minute color-sound film on Camp Dearborn for their respective organizations. Showings are available upon request to the Research & Information Department, LUzon 4-1200.

Two other pictures in the news feature showed the city queens with film photographer Doyne Jackson and a couple representing a local PTA as they picked up booking cards for the city film.

Audience Reaction

For Dearborn's MPR office, it is obviously important to gauge public reaction to the film. Mimeographed slips were passed out at each showing. There was no need for anyone to sign the slips—although many persons did, according to Mr. Pilch.

Criticisms of the new film were limited to such matters as the length of a sequence, the photography in spots, the sound track, etc. These have been few and far between.

Favorable comments ranged from "very good" to "let's have more films of this type," "what can I say after I say it's terrific!", "beautifully done."

One viewer, who is a public relations official for a Detroit agency, said "This is an excellent presentation befitting the dignity of the city. There should be much more of the same. The filming was handled in a professional manner and could easily be used as a guide to other municipalities."

Effective PR Tool

So, if Dearborn families enjoyed their country club more than ever this summer, some of the credit can logically go to the city-produced moving picture. Public-relations officer Pilch believes that the "effectiveness of a movie as a public-relations tool is so obvious as to require no substantiation."

The fact that his Research & Information Department created this newest film and looks toward the time when all major city activities are documented and available to citizens via film indicates how sold Dearborn is on the movie for its municipal information-education efforts.

"One thing we have learned in this field," Pilch says to officials of other cities, "is that cost need not be a barrier." Dearborn is fortunate in having talented manpower and suitable equipment for making and showing film. But Mr. Pilch suggests that in other cities, "that same source of manpower and equipment might be found in the photography or audio-visual classes and libraries of schools or nearby universities." ◄◄

Arrangements may be made to borrow the 16-mm film from the City of Dearborn by writing to the Research & Information Department, City Hall, Dearborn, Mich. Other information on audio-visual productions by cities may be found in "The City Tells Its Story," — for December 1960 — Chattanooga, Tenn., program of colored slides with narration; February 1961—Glendale, Calif., motion picture; April 1961—Beverly Hills, Calif., film-strip in color with sound; July 1961—Ames, Iowa, slide series.

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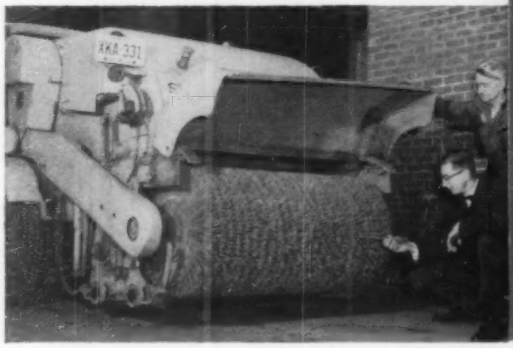

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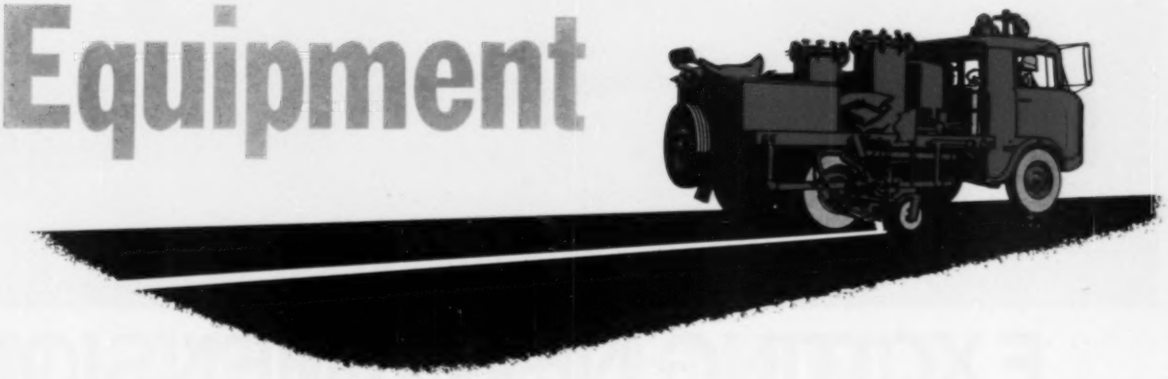

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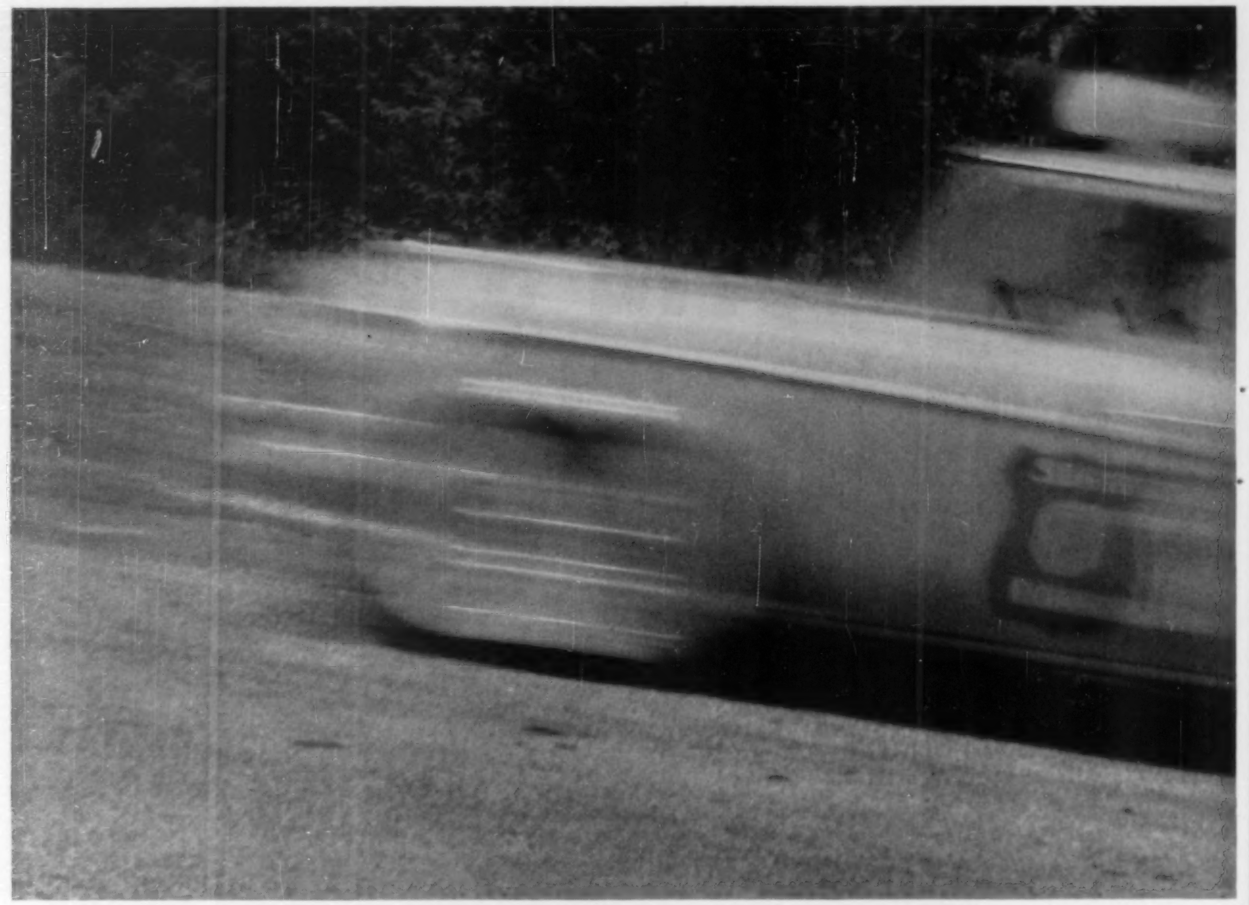
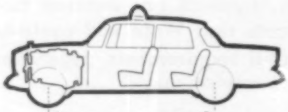


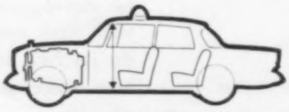
EXCITING NEW DIMENSION

New size, roomier '62 Lark Marshals are strictly for action—with bomb-like getaway, bullet speed! Give your big 6-footers a look at the new '62 Lark Marshals and watch them fight to get behind the wheel! New size—113" wheelbase—means more room inside than "standard" cars offer. High headroom, new heavy coil spring front seats with foam-padded cushion and back. With flush floors, no doorsills to trip over, getting in and out is fastest, easiest, safest.

Talk about **speed**—when you gun a '62 Marshal you get **instant** action! All 3 Lark Police Special engines are heavy-duty built, with special high-performance valves and new direct manifolding. They'll idle for hours without coking up—then leap into action at a nudge of the throttle. Extra safe too: new, 20% stronger ladder-type frame is really rugged; fin cooled, Heavy Duty over-size brakes bring you to fast, straight-line stops; glare-free dash panel is safety-padded.

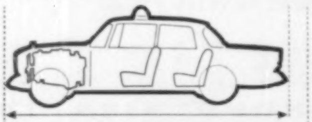


New length wheelbase
for more room inside.

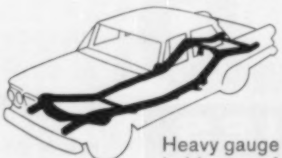


Plenty of head
and legroom for driver.

Short turning radius
for fast action.



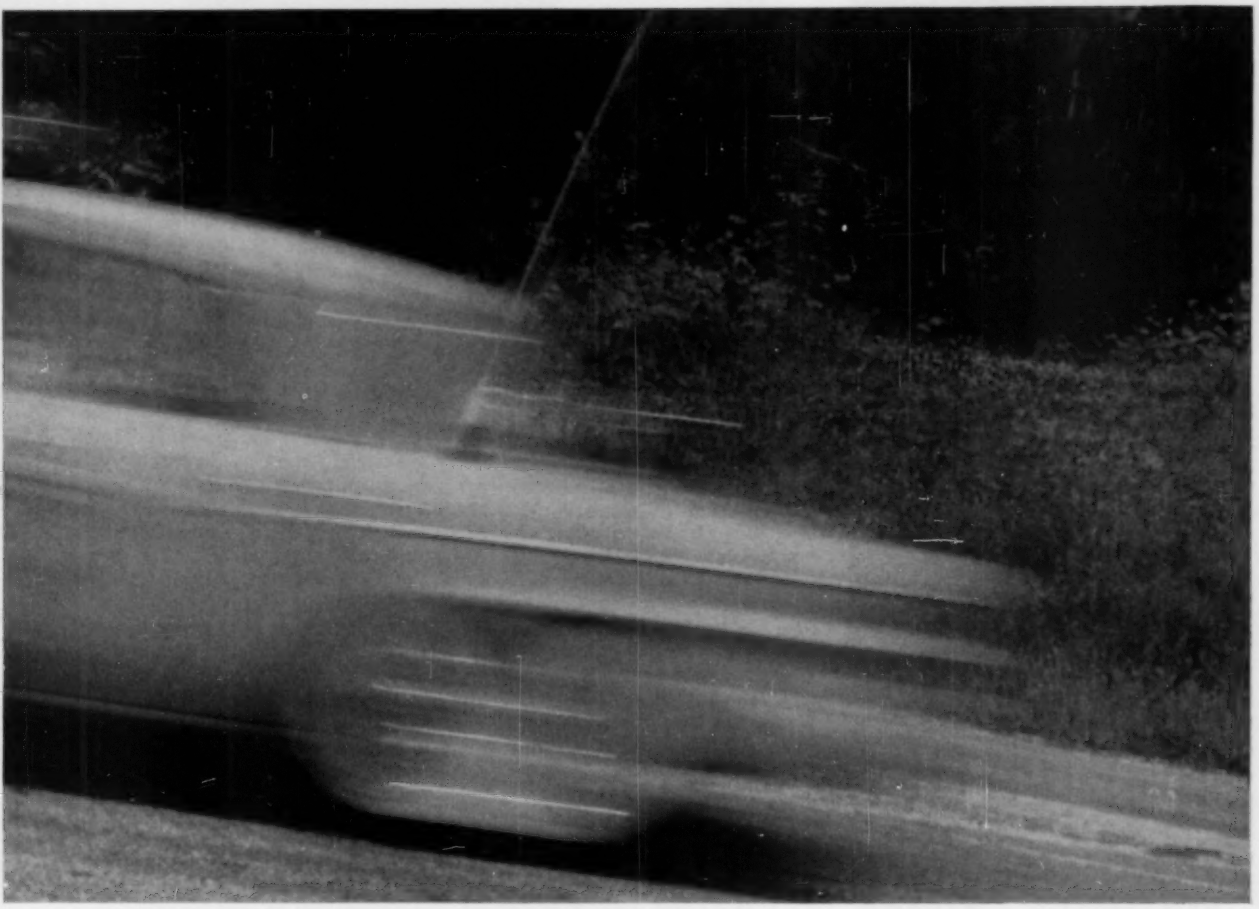
Up to 2 feet shorter
than standard cars.



Heavy gauge steel
ladder-type frame.

REVISE YOUR SPECS NOW TO INCLUDE THESE NEW '62 LARK DIMENSIONS

Wheelbase — 113". **Over-all length** — 188". **Headroom** — 36" front; 34.75" rear. **Legroom**—43.5" front; 49" rear. **Turning radius**—39'. **Wheel size**—15". **Brake lining**—195 sq. in. Heavy Duty oversize Marshal Eclipse. **Muffler and tailpipe**—aluminized steel. **Six and V-8 Police Special engines**—112, 180, 195, 210, 225 horsepower.



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3 LARK MARSHALS FOR '62

112 HP CITY MARSHAL

For routine patrol and detective work. Super-economical. Skybolt Six Police Special engine. Fast getaway. Does over 90 easily. Very easy to maneuver in heavy traffic.

180/195 HP PATROL MARSHAL

For all-purpose enforcement work, city or country. Can idle for hours without fouling, then zoom from 0-60 in 9.5 seconds. So easy to handle, drivers keep fresh, alert.

210/225 HP PURSUIT MARSHAL

For fast take-off, sustained speeds over 100. Leaps from 0-60 in 8.7 seconds. Corners solid, crash-stops straight.

Full line of heavy-duty Police options for all models.

YOUR CHOICE OF 2-DOOR SEDAN, 4-DOOR SEDAN OR 4-DOOR WAGON

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STUDEBAKER FLEET DEPARTMENT
SOUTH BEND 27, INDIANA

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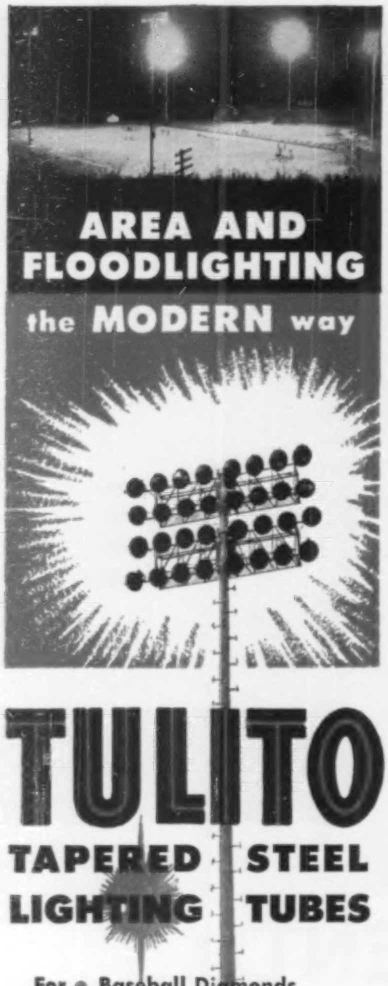
'62 LARK® MARSHAL

ENDURANCE-BUILT **BY STUDEBAKER**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Engineered for Permanence, Strength and Safety . . .
Designed to accommodate from 2 to 40 lights.
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Write for colorful illustrated brochure.

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P. O. Box 131
RED WING, MINNESOTA

The Ten Top Public Works Men-of-the-Year

The ten most outstanding public works men of 1961, named jointly by a jury representing the American Public Works Association and Kiwanis International, include:

- **David V. Auld, Director of Sanitary Engineering, Government of the District of Columbia;**
- **Henry A. Barnes, Commissioner of Transit and Traffic, Baltimore, Md.;**
- **Hugh A. Benner, Director of Public Works, Saginaw, Mich.;**
- **William A. Bugge, Director, Washington State Department of Highways;**
- **George L. Dement, Commissioner of Public Works, Chicago, Ill.;**
- **Robert H. Hess, Director of Water and Sewage, Wichita, Kan.;**
- **David B. Lee, Director, Bureau of Sanitary Engineering, Florida State Board of Health;**
- **Eugene Maier, Director of Public Works and Engineering, Houston, Texas;**
- **Jean L. Vincenz, Director of Public Works, San Diego County, Calif.;**
- **Brig. Gen. Alvin C. Welling, U. S. Corps of Engineers.**

Mr. Auld has achieved distinction for his management of water and sewerage facilities for the District of Columbia; for his work on the National Capital Planning Commission; and for leadership in promoting water-pollution abatement among the many metropolitan Washington, D. C., communities on an organized basis.

Henry A. Barnes has won recognition for leadership in the development of electronic traffic-control measures both in Baltimore and in Denver, his prior assignment. He was the first to develop the traffic-free interval at controlled intersections for pedestrian crossing, sometimes facetiously called "scramble" or "Barnes' Dance," but nevertheless frequently copied.

Mr. Benner has won recognition for skills in the wide gamut of municipal engineering services. Those achievements that have brought special recognition to his city for excellence range from street lighting to snow removal and water supply. In this latter activity, Mr. Benner serves on a tri-city board that provides water for the metropolitan area embracing Saginaw.

Mr. Bugge has won international recognition for skills in the engineering and administrative aspects of highway design and construction. He is chairman of the Highway Research Board, National Academy of Science, a member of the Board of Consultants of the Eno Foundation devoted to traffic research, and chairman of the committee on design policies of the American Association of State Highway Officials.

Commissioner Dement heads a department of municipal engineering that probably has influenced design changes of engineering principles more than any other similar group in the nation. Chicago's Congress Street Expressway broke a long-standing precedent by combining rail rapid transit with expressway design. Chicago's water-filter plants have caused new chapters to be written in every water-treatment textbook in the nation. The city's incinerator is not only the largest but also incorporates many new departures in engineering design.

Robert H. Hess has won national recognition for his development of water pipeline research. He manages and has developed to a high degree of efficiency one of the most unusual and complex water works in the nation; he also operates a sewage-purification facility complicated by unusual packing house and other industrial wastes.

David B. Lee has won international recognition in the sanitary-engineering field. He was advisor to the United States delegation to the World Health Organization assembly in 1949; he conferred with the Atomic Energy Commission on the problem of radioactive wastes, was a member of the President's Commission on the Health Needs of the Nation and is currently a member of the National Research Council committee on Sanitary Engineering and Environmental Health.

Eugene Maier, often referred to as the "best public works director in Texas," has won special recognition for leadership in traffic control. He is a member of the National Joint Committee on uniform traffic-control devices, and several Highway Research Board committees.

Jean L. Vincenz is probably the only director of public works in the nation to be elected president of a state league of municipalities. However, in addition to being a past president of the League of California Cities, he is probably best known as the father of the sanitary landfill, and the principles he developed in this fast-growing phase of municipal sanitation still remain "standard." It was he who coined

(Continued on page 161)

ASBESTOS-CEMENT SEWER-PIPE BY KEASBEY & MATTISON

LAYING PIPE UNDER WATER was the tough assignment of Lloyd Kispert & Son, contractors of Green Bay, Wisconsin, at the town of Preble, Wisconsin.

Below the water table...water-tight joints

Lloyd Kispert & Son recently laid 3611 feet of 12-inch K&M Asbestos-Cement Sewer Pipe within a few hundred feet of Green Bay. The water table was so high that the pipe was laid under water. Nevertheless, all joints had to be infiltration-tight. On the next page, Mr. Kispert, in his own words, tells how he solved this problem.

You can dig flatter grades for K&M Asbestos-Cement Sewer Pipe because its bore remains smooth and clean.

Water, snow, mud, and rain can't hold up the installation of K&M Asbestos-Cement Sewer Pipe.

"K&M ASBESTOS-CEMENT GRAVITY SEWER PIPE GAVE US PERMANENTLY TIGHT JOINTS IN WET GOING!"

Mr. Lloyd Kispert

"This was an extremely rough job. But, with K&M Pipe, we got tight joints in wet going. The K&M FLUID-TITE® Coupling connected easily, even under water. The men just had to lubricate the tapered end of the pipe and slide it into the coupling. We didn't need any heavyweight coupling pullers. Our men had an easy time handling the pipe because of its light weight. We are very satisfied with K&M Pipe and will use it again."

You could lay K&M Asbestos-Cement Sewer Pipe at the bottom of a 58′ deep lake, and it would be infiltration-tight.

The smooth bore of this modern pipe remains clean, permanently. The friction coefficient is low. You can plan fewer lift stations and flatter grades.

K·M
BEST IN ASBESTOS
Keasbey & Mattison
at Ambler

For more information on this top-quality gravity sewer pipe, write to: Keasbey & Mattison Company, Ambler, Pa.

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HANDLE WITH CASE

Utility

LOADING • CARRYING

Wouldn't 2 or 3 utility tractors be better than one oversize rig?

If your work involves a large percentage of widely scattered jobs, chances are you could speed up your services considerably with a "fleet" of mobile, utility tractors. Remember, you can buy *two or three* Case 430 *Utility* machines for the price of *one* larger, hard-to-move outfit. So, depending on how many units you need for *heavy* work, it will pay you to replace a few of your big rigs with a "fleet" of Case 430's. Thus the same investment will give you more equipment to work several projects at once . . . handle scattered service complaints fast . . . speed scheduled maintenance.

You also gain exceptional job versatility by choosing Case 430 *Utility* tractors. For example, you can specify 2 or 3 combination machines, equipped with backhoe and loader — for trenching, ditching and drainage installations. In addition, you might order several high-output loaders for stockpile and snow removal work. And maybe, a couple loader-mower tractors for alternate loading, mowing jobs. All machines, incidentally, can be fitted with *additional* quick-change loader-arm and rear-hitch attachments for added job flexibility.

Husky-built Case 430 provides strong dig-power for backhoe and loader work with *high-torque Case-built gasoline or diesel engine.* Powerful backhoe cuts 10′ deep, digs over 15′ from pivot, swings 180° with foot-pedal control for smooth, fast dig-and-dump. High-lift loader lifts up to 1200-lb payloads . . . discharges with 8′5″ clearance for quick dump-and-go. Tractor-loader works detachable hydraulic-controlled 6′ center-mounted rotary mower, or side-mount cutter-bar mower. *(Note:* If you want a larger 14′ backhoe and 2000 lb loader, specify Case Model 530.)

Try 'em free on your work. Find out how Case *Utility* tractors can give more and faster service with no increase in your budget. Call your Case Dealer now for free demonstration. Or write J. I. Case Co., Racine, Wis., Dept K1561 for specifications.

CU-BL-291

Model 430 with Case-Danco 6′ center-mounted rotary mows ahead of rear wheels, to full tractor-width . . . cuts weeds and grasses low as 1″.

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CIVIC TITLE OR BUSINESS____________________

AC-10 (please print or type)

SEISCOR

A DIVISION OF SEISMOGRAPH SERVICE CORPORATION
BOX 1590 • TULSA, OKLAHOMA

(Continued from page 156)

the name "sanitary landfill." He is a past president of the American Public Works Association and directs the public-works program for a county with 4,200 square miles and over 1,000,000 people

Brig. Gen. Alvin C. Welling has won recognition for his dynamic program of correcting the "missile mess" that was endangering the safety of the nation. Under his direction, the Corps of Engineers constructed 70 ICBM launching sites, brought other lagging programs up-to-date and placed some ahead of schedule. The vital work that he has directed is greater in magnitude than the Manhattan Project which resulted in the atomic bomb.

The ten men will receive special recognition during National Public Works Week, October 1st to 7th of this year. The jury that made the selection from some 150 nominees offered throughout the United States included: Harmer Davis, Director of the Institute of Transportation and Traffic, University of California; William S. Foster, Editor, THE AMERICAN CITY; Mark A. Hollis, Assistant Surgeon General and Chief Engineer, U. S. Public Health Service; Ray Lawrence, Black and Veatch, Consulting Engineers, and President, Water Pollution Control Federation; and Joseph O. Tally, Jr., immediate past president, Kiwanis International, and a former mayor of Fayetteville, N. C. ◄◄

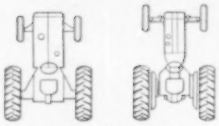
Nashville Metro Area To Get Air Survey

Nashville's Davidson County, Tenn., is in the process of getting a $600,000 property map and records system survey. The 533 square mile project—believed to be the largest ever undertaken by a mapping company—started in Nashville in early August by Aero Service Corp., Philadelphia.

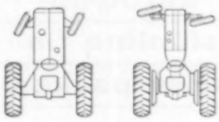
The two-year inventory will provide a new system of property-data recording, plus a complete updating of existing records. County Assessor Clifford Allen reports that many parcels of land in Davidson County have been lost in recording and no assessment can be placed on them.

Sponsor of the survey is Judge Beverly Briley, Davidson County judge and fiscal agent. He estimates that some 150,000 properties will be checked, recorded and mapped during the extensive program. The survey is being financed by short-term notes approved last month by the County Quarterly Court. ◄◄

ALLIS-CHALMERS DESIGN PROVES BEST ON THE JOB!



LONG WHEEL BASE



SHORT TURNING

LOW PROFILE

Take a look:

Longer wheel base . . . yet it turns tighter! Weight is spread out to give you better traction, a better working advantage.

And, the forward location of the front axle lets you make a pivot turn in less than 16½ ft.

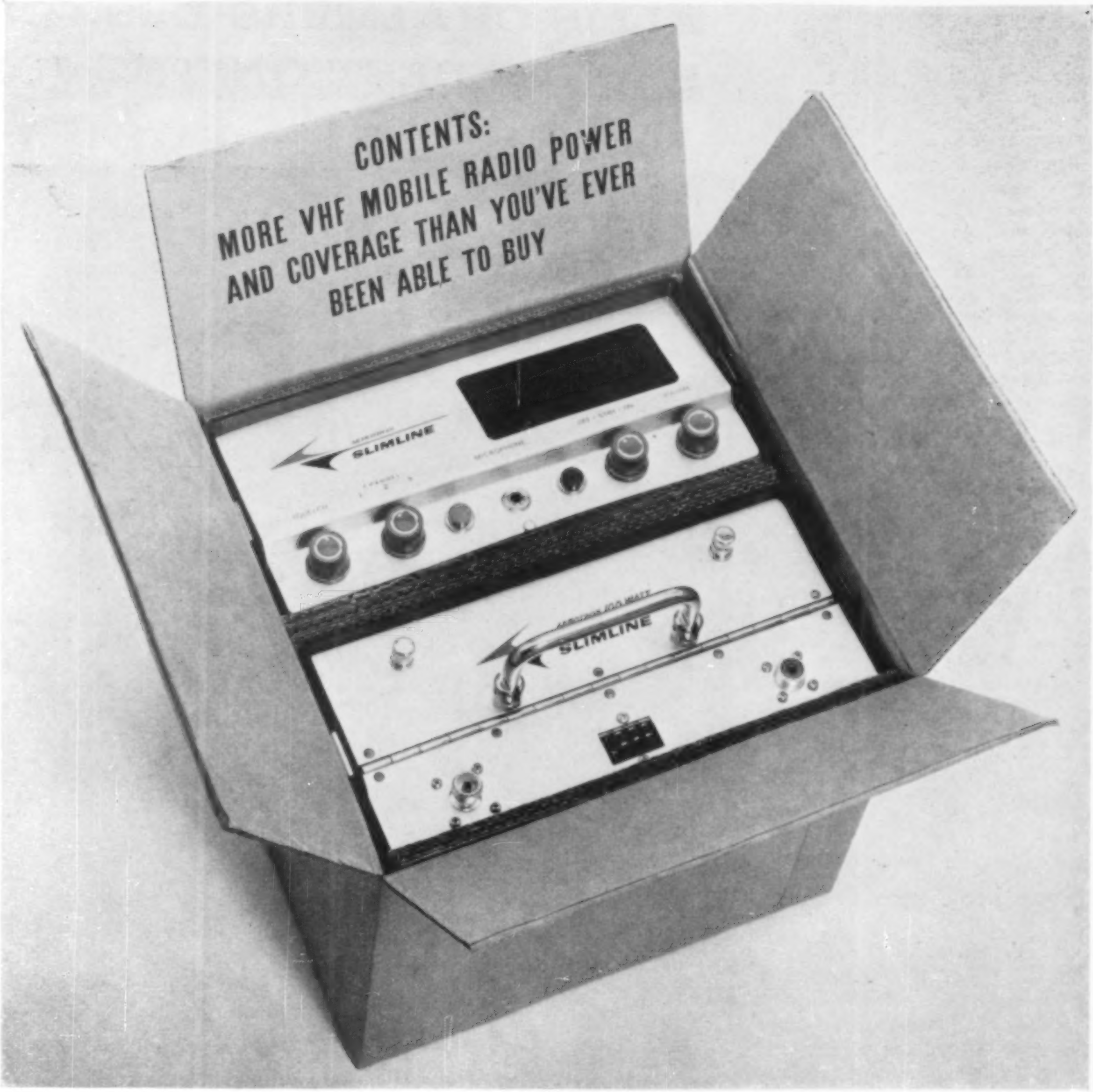
SHUTTLE clutch* lets you reverse direction without foot clutching or gear shifting. You simply move the lever forward or back!

Low-profile, high-clearance design bring twin advantages of stability and clearance!

IT DOESN'T COST TO FIND OUT! See your Allis-Chalmers dealer, or write Allis-Chalmers Mfg. Co., Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

*SHUTTLE Clutch available on the D-15 and the new H-3 and HD-3 compact crawlers!



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power package

FACT: The Slimline is the only 100-watt VHF Mobile Radio on the market. PURPOSE: Greater range from car to car—from car to base station . . . full saturation coverage of your entire area without dead spots. The Slimline power package (VHF or low band) is the only system that offers instant selection of normal output for short distance calls and full 100-watt output for long distance calls. ADVANTAGE—Keeps battery drain low. The stand-by power switch further reduces battery drain to less than that required for parking lights.

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IMPORTANT FEATURES: Transistor-powered / Heavy-gauge aluminum construction / Weight: Under-dash unit—8 lbs. 10 oz.; amplifier—13 lbs. 2 oz. / Precision hand-wired circuitry / Boost any 10-30 watt equipment to 100-watt output with amplifier alone. OPTIONAL: 2 or 3 channel operation / Unicall to guard against transmission from stations sharing the same frequency. PRICE: including all standard accessories: VHF—$595; low-band—$615; amplifier only—$250. For complete information, write today.

This is the first of a series based on survey returns from 225 selected cities, 176 of which employ sewer-service charges. Succeeding articles will list the charges imposed by various cities and cover such topics as: a comparison with water rates, flat vs. metered charges, special rates for individual users, air-conditioning limitations, what sewer-service charges purchase and many others.

Modern Sewer-Service Charges—Part I

Why Cities Need Them

The reason for the use of sewer service charges (sometimes still called "sewer rents") is simple—it avoids added taxes.

Of course, it still requires payment of money, in general, by the same group of people. But as any experienced administrator well knows, the public just doesn't like "taxes," but will accept, though grudgingly, a charge that pays for a service that it comprehends. The sewer-service charge is one of these. There is a growing number of others.

The Utility Function

Nevertheless, when we switch to sewer-service charges, we are not merely playing with words. It means that the service moves out of the realm of what can be termed loosely a "police" function, and becomes a "utility." In other words, it no longer is primarily an activity performed by the municipality to protect the general health and welfare of the community, to be paid on the basis of each individual's ability to pay, or the value of the property that he owns. In contrast, it becomes a sort of marketable service that each purchases in the degree that he desires it.

The public is familiar with other utility charges. Monthly gas and electric bills are not strangers. Most people willingly pay for water on the basis of the amount that they use.

Since sewage is only discarded water with a minute fraction of polluting material added (.02% to .05%), the collection and disposal of sewage for a fee has become a rather common practice.

The principal source of revenue for most cities is the property tax. Local school districts also rely on this for revenue and, in general, now grab the lion's share of these funds in ever-increasing ratios. Many now question that this tax can continue to be the primary source of local revenue. In the last 20 years municipal property-tax receipts have tripled but the revenue from special charges is seven times higher—reflecting the ascending use of these charges for new as well as old services.

G. O. and Revenue Bonds

General-obligation bonds can supply funds for sewerage service and have the advantage of enjoying a relatively low interest rate. However, this type of bond depends primarily on the badly overloaded general-property tax to meet the de-

(Continued on page 165)

CHATTANOOGA, TENN.

Rates Per Month

	Per 1,000 Gallons	
	City	*Suburban*
0-50,000	$.125	$.19
Next 50,000	.12	.15
Next 100,000	.11	.13
Next 250,000	.10	.11
Next 300,000	.09	.09
Next 500,000	.08	.08
Next 750,000	.07	.07
Next 1,000,000	.06	.06
More than 3,000,000	.05	.05

The minimum sewer-service charges vary according to water-meter size as follows:

	Minimum Charge	
Meter	*City*	*Suburban*
⅝"	$ .40	.60
¾"	.90	1.30
1"	1.50	2.25
1½"	3.50	4.50
2"	9.00	9.00
3"	20.00	20.00
4"	48.00	48.00
6"	108.00	108.00

Related Information

Population	160,000
Population served by sewers	155,000
Annual sewer service charge revenue	$675,000

Remarks

One bill includes the sewer-service charge as well as the water charge. The city is building a new 40-mgd plant as well as expanding a small existing activated-sludge plant. A ridge divides the city and requires the construction of separate plants to serve each slope. The small plant has been in operation since 1939. Sewer-service charges appeared in 1953 to finance the construction, operation and maintenance of interceptor sewers, pumping stations and treatment plants. Commercial and industrial users pay monthly; residential, quarterly. Users contributing strong waste will pay a surcharge of five cents per 1,000 gallons when the new plant begins operating.

William S. Teppenpaw
General Superintendent
Department of Public Utilities

This is typical of sewer-service charges in a moderately large metropolitan area. Note the variation in charges between city and suburban residents.

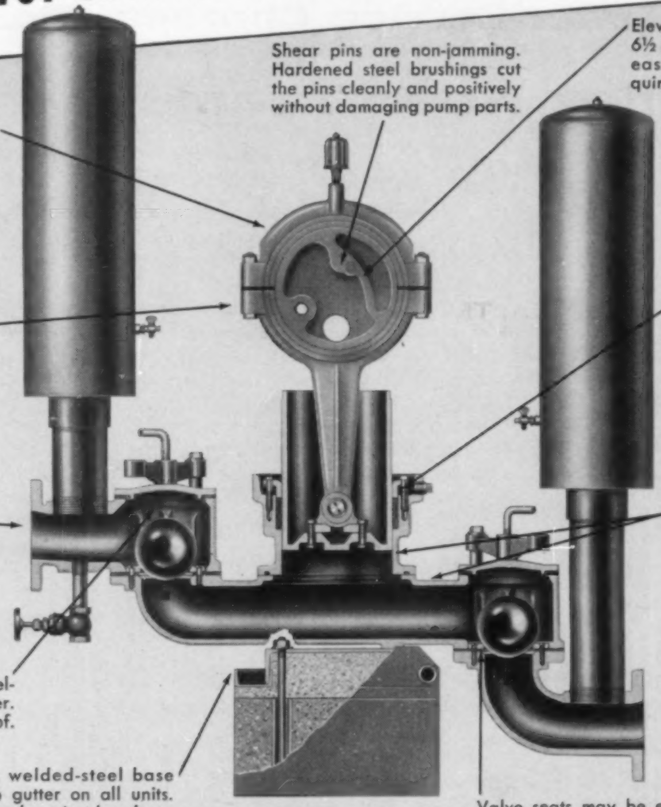
Public Reaction

Answers by plant superintendents or other responsible officials to the question: "Are sewer-service charges relatively well received by the public?"

	Percent Answering:		
Population Group	**Yes**	**No**	**Other**
Under 10,000	**91**	**3**	**6**
10,000 to 25,000	**81**	**12**	**7**
25,000 to 100,000	**86**	**7**	**7**
Over 100,000	**74**	**9**	**17**
All replies	**84**	**8**	**8**

Marlow Sludge Pumps

for SEWAGE TREATMENT PLANTS



Shear pins are non-jamming. Hardened steel brushings cut the pins cleanly and positively without damaging pump parts.

Eleven stroke variations from 6½ inches to zero. Quickly and easily changed to meet required capacity.

Oversized eccentric bearing with a special marine babbitt wears longer, and cuts maintenance time and expense.

Heavy flanges on each side of eccentric carry every pressure load met.

Five rings of ½ inch square graphited flax provide ample packing.

Larger passageways eliminate much of the possibility of clogging and give long, trouble-free service.

Pump body and stuffing box are separate castings. Plunger can be removed without disturbing shafts or bearings.

Ball valve is guided by beveled ribs in the valve chamber. Design is virtually clog-proof.

Rugged, welded-steel base with drip gutter on all units. *Guaranteed against breakage for the life of the pump!*

Valve seats may be easily removed without dis-assembling of any part of the pump or piping. May be made of special material if service requires.

Marlow makes a complete line of plunger sludge pumps. They are available in Simplex, Duplex, Triplex, and Quadruplex designs with 7-, 9-, or 11-inch plunger diameters. Capacities range up to 500 gallons per minute with pressures up to 125 pounds per square inch. These pumps can be used for a wide range of application including handling raw and digested sewage sludges, industrial and chemical waste and slurries, lime putty and slurries, pulp and paper stock, settled oil solids, oil refinery sludges, distillation mashes, sugar bagasse, gum and chicle slurries, meat packing wastes, fish packing wastes, cannery wastes, tannery fleshings, etc.

Marlow PUMPS ®

MARLOW PUMPS® DIVISION OF BELL & GOSSETT CO.

MIDLAND PARK, NEW JERSEY

Morton Grove, Illinois Longview, Texas

0-368

(Continued from page 163)

mands of principal and interest payments. In addition, issuance of these bonds usually requires a permissive vote of the people and, in the case of many cities, would nudge or even surpass the legal bonding limit.

Revenue bonds, on the other hand, perform the same functions with none of these disadvantages. They do, however, require dedicated fees, the sewer-service charges, for repayment of the obligation. The payment of these fees raises this function to a utility classification.

Other Benefits

Shifting the financial burden of sewerage works to sewer-service charges from *ad valorem* taxes results in a wider array of contributors. Churches, schools, and other governmental units which do not pay property taxes immediately become paying customers. The packing house or cannery which has the same assessed valuation as a warehouse pays in most cases more nearly in proportion to the amount if not the strength of its sewage. And homeowners recompense more nearly in proportion to their use of the facility, rather than according to the size or location of the home. The criterion is use rather than property valuation.

Of course, those properties not connected to the sewer and owners of vacant lots do not remunerate as they would under the general taxation plan. They do enjoy some benefits from having the facilities available but if they pay an assessment for the construction of a public sewer in the future, but not for its use, no grossly unfair advantage results. Various authorities list other disadvantages which include the difficulty of gaining public approval, the addition of another bill and increased administration and clerical help. However, they offset these with many advantages: the continuity and adequacy of funds, the elimination of competition with other items in the budget, the freedom from diversion of these funds and many others.

Officials' Opinion

The anticipated opposition from prospective customers usually overshadows other disadvantages of the sewer-service charges in the eyes of municipal officials. However, people are becoming accustomed to these charges and probably object less

(Continued on page 167)

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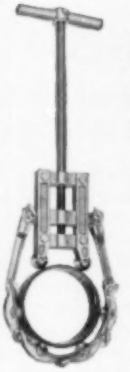

Ellis Heavy Duty Pipe Cutters For Pipe Up To 16" Dia.

With Long Lasting Cutter Wheels

Designed for water works men who appreciate the rugged construction of drop-forged frame and links; and a tool that assures no pipe breakage, no re-cutting and no spoilage.

THREE SIZES
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No. 1 for 4" to 12" Pipe
No. 1B for 4" to 16" Pipe

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TELKEE convenience shows all keys at a glance. Locates loaned or assigned keys instantly. Saves time, saves money.

TELKEE security provides complete continuous record of all keys issued. Key identities known only to authorized personnel.

Available in 10 models, 33 capacities from 21 to 2240. Compact cabinet of fine furniture steel, tens of thousands in use in offices, industrial plants, hotels, stores, schools, hospitals, and public buildings, large and small, in U.S.A., Canada, and overseas.

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Made where gas costs 60¢ a gallon.

Regular gas.

The only kind a Volkswagen needs.

The place is West Germany.

13 years ago, tradesmen used bicycles and motor scooters to get around the high cost of gas. Could Volkswagen make a truck that would do for business what our sedan did for families?

Our answer was the VW Panel Delivery. It ran on half the gas that others used.

Many still give all the credit to our engine. (The efficiency of VW's 4-cylinder air-cooled car and truck engines is legendary.)

But to tell the truth, our light weight is just as important.

The engine itself is built of magnesium and aluminum alloys, one of the lightest designs in the world.

And our truck is designed without radiator, driveshaft or the heavy members used in bolted construction. For extra strength, the Volkswagen body is welded. It's all one piece.

We save 1,600 lbs. this way. A ¾-ton load you do not buy gas for.

How much gas don't you buy?

The owner who saved $480 a year over his former truck did not surprise us. (He did this driving 2,000 miles a month.)

Almost every VW owner gets over 20 miles a gallon and a few even get 30.

Our average is 24. What's yours?

(Continued from page 165)

strenuously now than previously when faced with the prospect. In fact, adequate public-relations campaigns well in advance of deadlines have in some cases generated considerable enthusiasm for obtaining the necessary sanitary facilities by means of this type of financing.

An overwhelming majority of plant superintendents and other responsible officials in 176 selected cities reported that the public accepts sewer-service charges relatively well. Those indicating poor responses varied from a low of 3% in the under 10,000 group to a high of 12% in the 10,000 to 25,000 category. Some noted a fair reception and others apparently felt they did not have enough information to answer the question. It is significant to note that 17% of the responders in the over 100,000 group did not indicate either yes or no. The superintendents in these large cities may feel that they are not close enough to the public to determine accurately their feelings.

A superintendent in a large Texas city qualified his negative reply with the statement—"not much comment now after ten months of operation." The majority of those finding objection to the charges had recently established or boosted these fees. A few reported that increased water rates resulted in higher sewer-service charges because of a percentage relation between them. Although tying sewer-service charges to water rates is a common and logical practice, officials should be wary of increasing sewer charges just for the sake of riding along with a water rate boost. The basis for change should always be the need for funds rather than the route of least inertia.

Many consulting engineers comment positively about sewer-service charges. W. R. Bradlee of Ford, Bacon and Davis, New York City, favors the "operation and maintenance of all facilities by the direct service charge to all sewage works users." He also recommends basing it on metered water use. Robert J. Ellison of St. Paul advises charges based on volume and strength. J. B. Wilson of Indianapolis, although favoring a sewer charge, believes " . . . the public tends to feel that this is added to the water bill."

Sewer-service charges are taking an increasing role in the American way of life. Years ago, only the larger cities built sewage-purification plants. Our expanding population and the demand for much larger quantities of pure drinking water now require sewers and treatment-plant construction in even the smallest hamlets. The squeeze on property taxes results in a larger number of communities imposing sewer-service charges as the only feasible method of financing some portion or phase of these facilities. The number of these sewer-service charges now in effect speaks well for the ability of our officials to get the job done in the face of many obstacles. The fine public acceptance of these charges indicates the maturity of our people.

Need for Sanitation

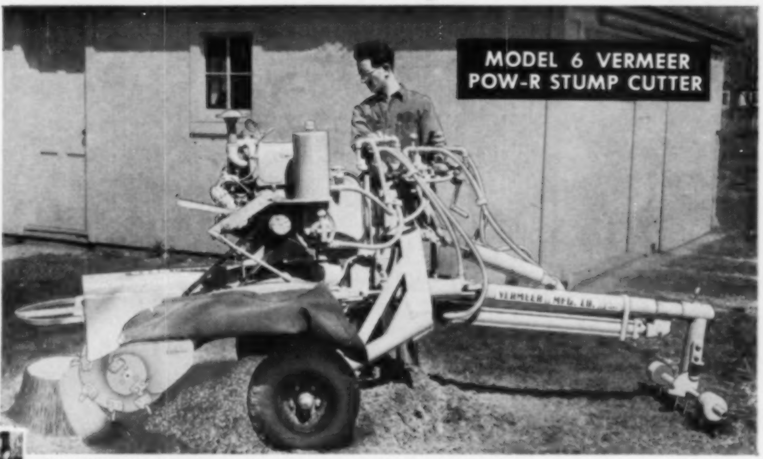
The nation-wide campaign of the Department of Health, Education and Welfare awakened the American people to the necessity of cleaning up our water resources. Although the prospect of spending money for something that has gone down the drain is not nearly as attractive as dedicating these funds to purifying one's drinking water, many now

(Continued on page 169)

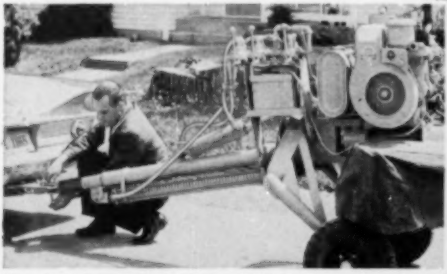
Vermeer Introduces New Pow-R-Stump Cutter Model

Smaller, Low-Cost, Easy-To-Move Model 6 Rips Out Stumps In Minutes

A new, smaller model is the latest addition to the well-known Vermeer Pow-R-Stump Cutter line. The hydraulically operated Model 6 is specifically designed for low cost stump removal in small municipalities, utilities, cemeteries, golf courses, parks and by tree service firms. Rips out any size stump in minutes . . . down 6" below the ground surface. Ideal for those hard-to-get-at places, through gates, close to buildings, fences, trees and shrubs. An ideal companion unit for Model 10 and Model 18 owners. The Pow-R-Stump Cutter is registered under U. S. Patent No. 2912022.



Hydraulically Controlled By One Man—Photo above shows control center of the Model 6. Just 3 levers control all cutting movements of the cutting wheel. No handwork, no back-breaking labor, no chopping.



Easy To Transport—pull the Model 6 from job to job with any car, truck, tractor or jeep. Only 36" in transport width. May be maneuvered into position for cutting or trailing by one man.

MAIL COUPON FOR ALL THE FACTS

Please send me complete information, literature and prices of the new Model 6 Pow-R-Stump Cutter.

NAME ....
DEPT. OR TITLE ....
FIRM ....
ADDRESS ....
CITY .... STATE ....

VERMEER MANUFACTURING CO.
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Here's why you get Better Trees and Nursery Stock from COLE NURSERY CO.

IDEAL soil and climate conditions, careful preparation and proper irrigation contribute to the quality of Cole plants. Highly-mechanized systems of planting, cultivating and root pruning produce strong, healthy plants, with more compact root systems, at lower cost. Mechanical digging methods and careful packing assure delivery of Cole nursery stock in good condition with uninjured roots.

Since 1881 Cole Nursery Company has concentrated on developing and producing only the better varieties and highest quality trees, shrubs, evergreens, hedge plants and ground covers. The extensive experience of more than 75 years is applied at our 1200-acre properties at Painesville and Circleville, Ohio. These large-scale operations are among the most modern nurseries in the industry.

Literally millions of trees and plants, in more than 360 varieties, give you a dependable source of material to meet your needs in large quantity and wide variety. We will be glad to quote on your requirements.

These patented Cole Originals help solve your landscaping and maintenance problems

Although each variety is unique, these trees have all the best qualities of the Honeylocust. They transplant easily, require no staking, are exceptionally strong, hardy and relatively fast growing. Of many thousands grown, only a very few have exhibited small, embryo thorns which drop off or are absorbed by the growing tissue of the tree. They are widely adaptable to almost any soil or climate, readily withstand ice and storm damage, drought and poor drainage. They cause no ground-litter, require no fall clean-up or leaf removal. You'll never buy trees that cost you less for maintenance, damage or replacement.

Spectacular SUNBURST
(Plant Patent No. 1313)
The sensational, new two-color tree with brilliant yellow foliage on branch tips. It appears to burst with bloom all summer long.

Cole's New IMPERIAL
(Plant Patent No. 1605)
The graceful, spreading, new Honeylocust that grows strong and straight *without staking*. A favorite of landscape men and tree experts.

Cole's new SKYLINE
(Plant Patent No. 1619)
Distinctive, stately variety with strong trunk and shapely crown. *Needs no staking*. Dark green foliage has heavy, leathery texture.

Cole's New MAJESTIC
(Plant Patent No. 1534)
A clean, graceful, symmetrically-branched tree. Produces a straight, sturdy trunk and compact crown *without staking or special trimming*.

Cole's New TALLHEDGE
(Plant Patent No. 1388)
A thornless, glossy Columnar Buckthorn that grows to 12 feet. Ideal for tall, narrow, dense hedges or screens. Bears colorful berries.

LARGE QUANTITIES
360 VARIETIES
WRITE FOR CATALOG

THE COLE NURSERY CO.
PAINESVILLE, OHIO

OHIO'S LARGEST
WHOLESALE NURSERY
ESTABLISHED 1881

(Continued from page 167)

realize that one person's sewage becomes another's water supply after a journey of a few miles downstream and a trip through a water-treatment plant. With this in mind, many now realize the necessity of treating their own waste and trust that those upstream must do the same.

Professor Nathaniel Wollman of the University of New Mexico indicates that pollution is becoming the primary water problem rather than a scarcity of supply. He also predicts that increased future pollution loads will require higher degrees of treatment. The need for more and larger sewers as well as sewage-treatment plant improvements will increase. And so, too, will the use of sewer-service charges for financing these necessary facilities. The utility function is the answer to the tax squeeze. ◄◄

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Youngest City—Oldest City Hall

One of the youngest cities in California, Pico Rivera, may have the state's oldest city hall.

The building, built about 1872, is the former home of Rivera pioneer Thomas Lewis Gootch. The white ten-room house in the center of the present city of Pico Rivera is situated on land that was once part of the Mexican Governor Pio Pico's vast land grant.

Pico Rivera, a city of 49,150 population, has had to keep pace with expanded services by adding administrative and secretarial personnel. Space is now at such a premium within the city hall that the council has to meet for study sessions in a small building in one of the city parks. The room which was originally designated for council chambers now houses the finance department. ◄◄

NOW... FOUR BACKHOE-LOADERS

from

PARSONS

PARSONS
1500

MODEL 1000	MODEL 1200	MODEL 1300	MODEL 1500
10-ft. Backhoe-Loader	12-ft. Backhoe-Loader	13-ft. Backhoe-Loader	15-ft. Backhoe-Loader

Now Parsons offers four backhoe-loaders: the new 10-ft. Model 1000 and the 13-ft. Model 1300 . . . plus the 15-ft. Model 1500 and 12-ft. Model 1200 announced earlier . . . broaden the Parsons line of field-proved utility backhoe-loaders to four models. These outstanding attachments fit all popular tractors, new or used. They're field-proved by contractors, utilities, municipalities, under toughest conditions. Send coupon for full details!

With all these
"More-for-your-Money"
Features:

Live-Circle Hydraulic Loop • Fast Cycling Action • Non-Skid Stabilizers • Cushioned "Dock" Fender • 3-Position Dig-All Buckets • Fit All Popular Tractors.

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A Division of KOEHRING *Company*

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TRUE EFFICIENCY WITH FLEXIBILITY

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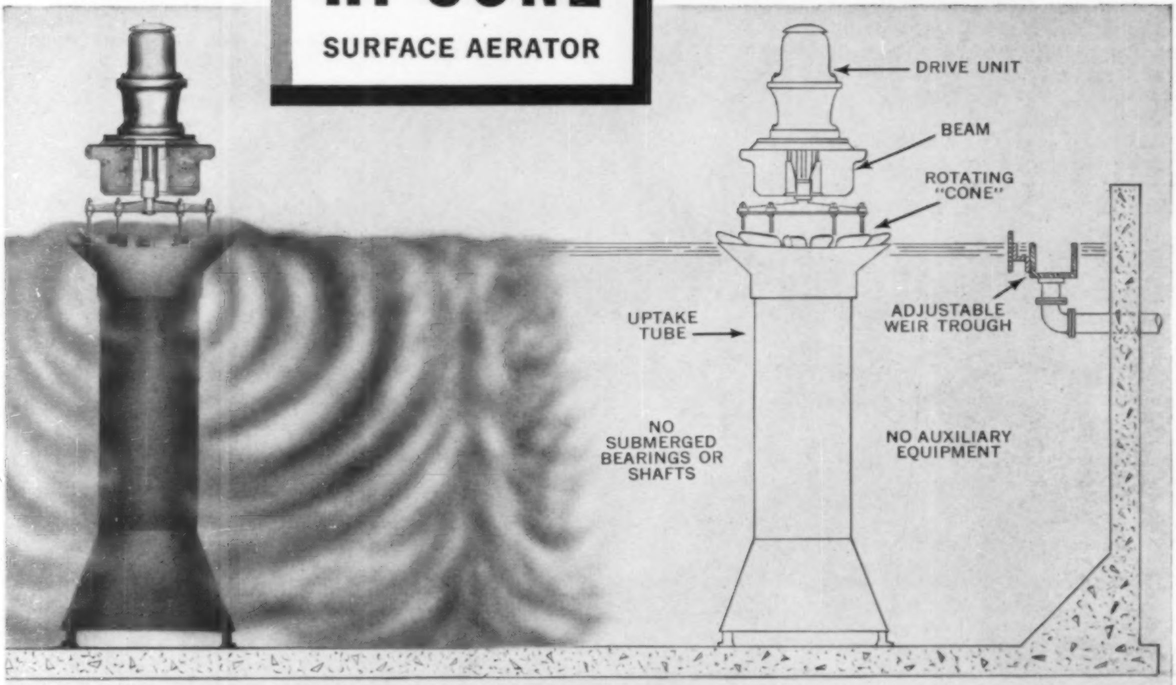
SURFACE AERATOR



Units for ALL Sizes of Waste Treatment Plants

THE TRUE EFFICIENCY of any type of sewage aerating equipment is best measured in terms of oxygen dissolved into the sewage, not air "delivered" to it. Until the oxygen is in solution, it is not available to the aerobic organisms responsible for purification.

As a result of recent investigations, it is becoming increasingly apparent that oxygen absorption is almost entirely dependent on the rapid and continuous creation of liquid-to-air interfaces. This fact has been long known but not forcibly demonstrated until recently. All oxygen absorption occurs at the liquid "surfaces"—regardless of equipment design or method of aeration.

Therefore, the gauge of efficiency, whatever type of equipment you consider, is "lbs. of oxygen absorbed per KWH."

Compare Hi-Cone's "efficiency rating" with any other aeration equipment. At the same time, investigate the ease with which Hi-Cone handles variations in waste flows and strength through easily adjustable weirs and variable operating speeds. You can get this information by asking your Yeomans representative or the factory for the studies offered at right.

TYPICAL FLEXIBILITY AND EFFICIENCY OF NO. 70 HI-CONE (OXYGENATION CAPACITY—20° TAP WATER)

Inches of Cone Exposure	R.P.M.	Lbs. O_2 Absorbed per Hour at 20° C	NET KW	NET KWH per Lb. Oxygen Absorbed
½	34	37.2	7.0	.188
½	42	57.5	9.9	.172
2	38	38.7	7.3	.189
2	46	54.0	10.0	.185
4	34	27.7	4.9	.177
4	50	54.0	9.5	.176

Now Available! Basic Data For Evaluating Aeration Equipment

- ☐ Activated Sludge Plants
- ☐ Aerobic Digestion Plants
- ☐ Aerator Performance Studies

H-6139

YEOMANS

2000-3 N. Ruby Street • Melrose Park, Illinois
WASTE HANDLING SPECIALISTS FOR OVER 60 YEARS

Chicago Builds An 11-Band "Crossband" Police Radio System

By **O. W. WILSON**, Superintendent of Police

Radio Engineer Frank W. McLaughlin of the Chicago Police Department (left) and a technician test a frequency and FM station modulation monitor atop one of the 250-watt base stations in the new police radio network.

Chicago is installing a new 11-channel police radio communications system that divides the city into eight zones and three city-wide police radio channels, each using two frequencies. A specially designed communications center at police headquarters in downtown Chicago will control all channels.

"Crossbanding" provides the necessary 22 frequencies. This is a technique that combines VHF and UHF frequencies. Mobile units in the new network will transmit on VHF frequencies and receive on UHF frequencies. Base stations will transmit and receive on the opposite arrangement of frequencies. Each mobile radio will operate on its assigned zone frequencies and on one of the three city-wide channels.

The boundaries of the eight communications zones coincide with various telephone exchange areas. Each zone will have its own radio channel and three control consoles at headquarters.

Telephone complaints are routed automatically to dispatchers assigned to the zones where callers are located. Dispatchers can immediately send radio cars to the scene. This direct method informs the dispatcher of the urgency and complete nature of each call he sends out by radio and eliminates the delay of central-switchboard screening. The use of 11 channels reduces the amount of traffic that each handles, eliminating backlogs caused by crowded air time.

The control consoles include large maps of the areas they cover and special lighting equipment for each of the cars assigned. As the dispatcher assigns a car to a complaint and the officer acknowledges it, an IBM card is filled out and dropped into a slot corresponding to the assigned car. This turns off the light for the car on all three zone boards to let the dispatchers know that the car is unavailable for another call.

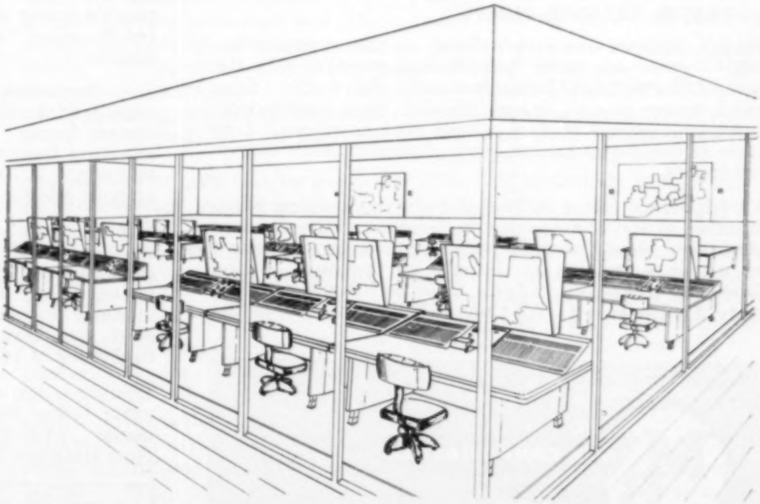
Each radio-equipped vehicle will be able to switch to one of the three city-wide channels. When a car is ordered to leave its zone in a chase or other emergency, a zone dispatcher moves to a city-wide console. He switches to City-Wide #1 and asks that the squad car personnel do the same.

The other two city-wide channels, #2 and #3, will be used for radio control of vehicles used by various special divisions in the department. Six consoles will be used for city-wide dispatching. Four will handle overflows and two will be used for supervisory and special usages.

The new system, installed by Motorola, Inc., under a $1,500,000 contract provides:

- **885 of the crossband mobile units.**
- **Conversion kits to adapt 604 existing mobile units.**
- **22 250-watt base stations to provide regular and standby facilities for each channel.**
- **34 control consoles and various towers and other accessories.**

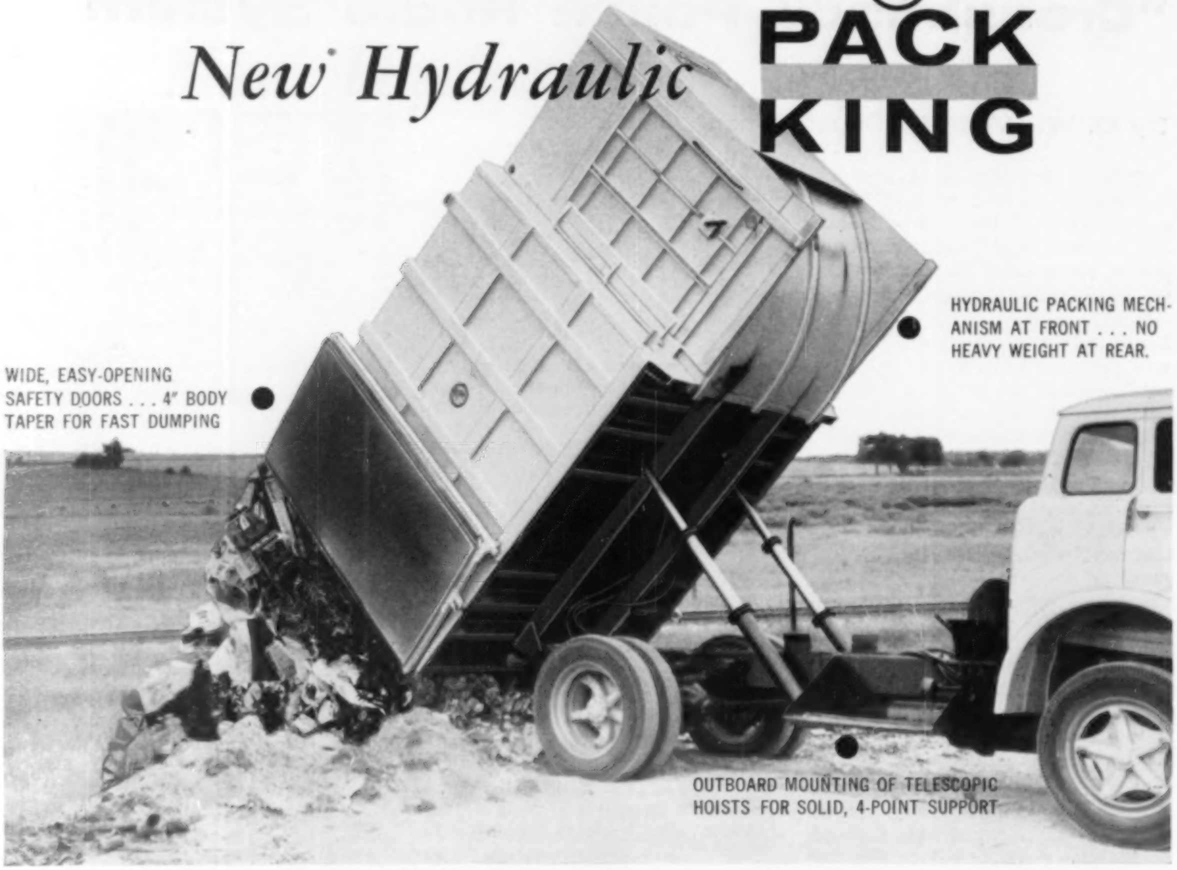
The city also specified that there should be a street-by-street electronic survey to assure 100% coverage of the Chicago area by UHF signals. The city's contract with Motorola required equipment modifications for five years. ◄◄



The heart of the new police communications system, the communications center, located at Police Headquarters, has been built to this schematic drawing.

New Hydraulic PACK KING

M B



WIDE, EASY-OPENING SAFETY DOORS . . . 4" BODY TAPER FOR FAST DUMPING

HYDRAULIC PACKING MECHANISM AT FRONT . . . NO HEAVY WEIGHT AT REAR.

OUTBOARD MOUNTING OF TELESCOPIC HOISTS FOR SOLID, 4-POINT SUPPORT

with PERFECT-BALANCE DUMPING

- **STEADY AS A ROCK DURING THE DUMP**
- **SAFER FOR CREW . . . NO TAILGATE**
- **FASTER, CLEANER DUMPS**

Perfect-Balance dumping — even on the roughest terrain — gives you faster, safer dumping action with the new M-B PACK-KING refuse collection body. Your truck driver doesn't spend valuable time "jockeying" the truck around to find a level spot to dump. Less time at the dump means more profitable hours servicing routes.

An important factor in Perfect-Balance dumping is the location of the compaction mechanism at the front of the body. Most hydraulic packing machinery is mounted within a tailgate at the rear of the unit. When dumping, the heavy tailgate must be lifted before the body itself is raised. All this off-balance weight in the air, plus load shifting, makes for an unstable and dangerous situation. However, with the M-B PACK-KING design, the compaction mechanism is over the truck's center of gravity when the body is raised. The truck cannot "up-end" . . . with potentially dangerous results.

As a further aid to Perfect-Balance dumping, the dual telescopic dump rams are mounted *outside* the truck chassis frame. The widespread, solid, 4-point support resulting from outboard mounting prevents hazardous side-sway . . . especially important when dumping on uneven ground.

But there are more great new advantages to be found in the PACK-KING in addition to Perfect-Balance dumping: Higher density compaction without voids; no annoying "fall-back" of material when packing or loading; rugged, "rock body" construction with heavy steel members surrounding the body; available in capacities of 14, 16, 20, and 24 cu. yds.

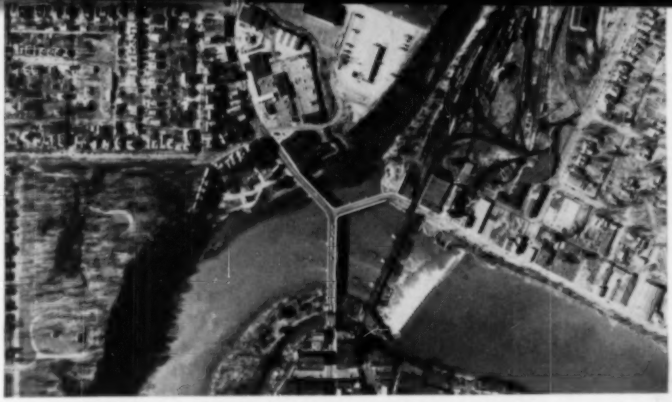
There's a lot more to the PACK-KING story . . . write today for specifications and the name of your dealer. M-B Corporation, 1615-10 Wisconsin Ave., New Holstein, Wis.

QUALITY MUNICIPAL AND INDUSTRIAL
EQUIPMENT SINCE 1907

MB
M-B CORPORATION
NEW HOLSTEIN, WIS.

LINE MARKERS
SWEEPERS REFUSE BODIES

M-B MECHANICAL PACKER BODY ALSO AVAILABLE! Features "Push-Out" unloading, simple mechanical drive, capacities from 14 to 24 cu. yds.



One of the more than 400 aerial photographs required to cover the area shows downtown Zanesville and the famous Y bridge over the Muskingum River.

A composite photomosaic of Zanesville and the surrounding area, wall-mounted in the City Council chamber, provides detailed information for Public Works Director Fred Hardy (left) and City Manager Richard Custer.

(Zanesville Times-Recorder photo)

The Aerial Survey Came First

. . . enabling Zanesville, Ohio, to prepare an orderly city plan, to schedule sewers and streets, to locate parks and utilities

By **RICHARD H. CUSTER**
City Manager

One of the handiest "tools" in City Engineer Henry Weigelt's office is his set of aerial maps. The benefits that it brought to Zanesville surpass anything that we anticipated. We find the value particularly great during this period when our 150-year old city is showing the kind of vigorous growth that one ordinarily associates with a youngster.

Prior to our aerial survey, Zanesville never had a contour map. Our engineering department developed a map based on the Muskingum River Harbor survey some years ago at a scale of one inch to 400 feet. Later they added adjacent areas and subdivisions arbitrarily to form the city realty map. This served adequately as long as developers and financing agencies wanted only the location of property, and were not particularly worried about accuracy or topography. Except for a strip along both sides of the river, one could not use the map to obtain accurate planimetric features.

After continued controversy over public records, the city council decided to obtain a comprehensive map showing detailed topography. Such a map would have to provide the basis for solving disputes, invoicing public utilities, assessing property taxes, and conducting long-range planning and engineering. As a result, two years ago we talked with and obtained proposals from several mapping companies and ultimately selected the Abrams Aerial Survey Corporation of Lansing, Mich., to do this work.

We specified, and they delivered aerial photographs at two scales:

- **one inch to 1,200 feet, for ground-control extension and the preparation of a street map.**
- **one inch to 400 feet for a photograph mosaic and the topographic mapping.**

Within two weeks from the date of photography, the city received a complete set of 9x9-inch contact prints at the latter scale, a photographic index and a stereoscope for three-dimensional study of the prints.

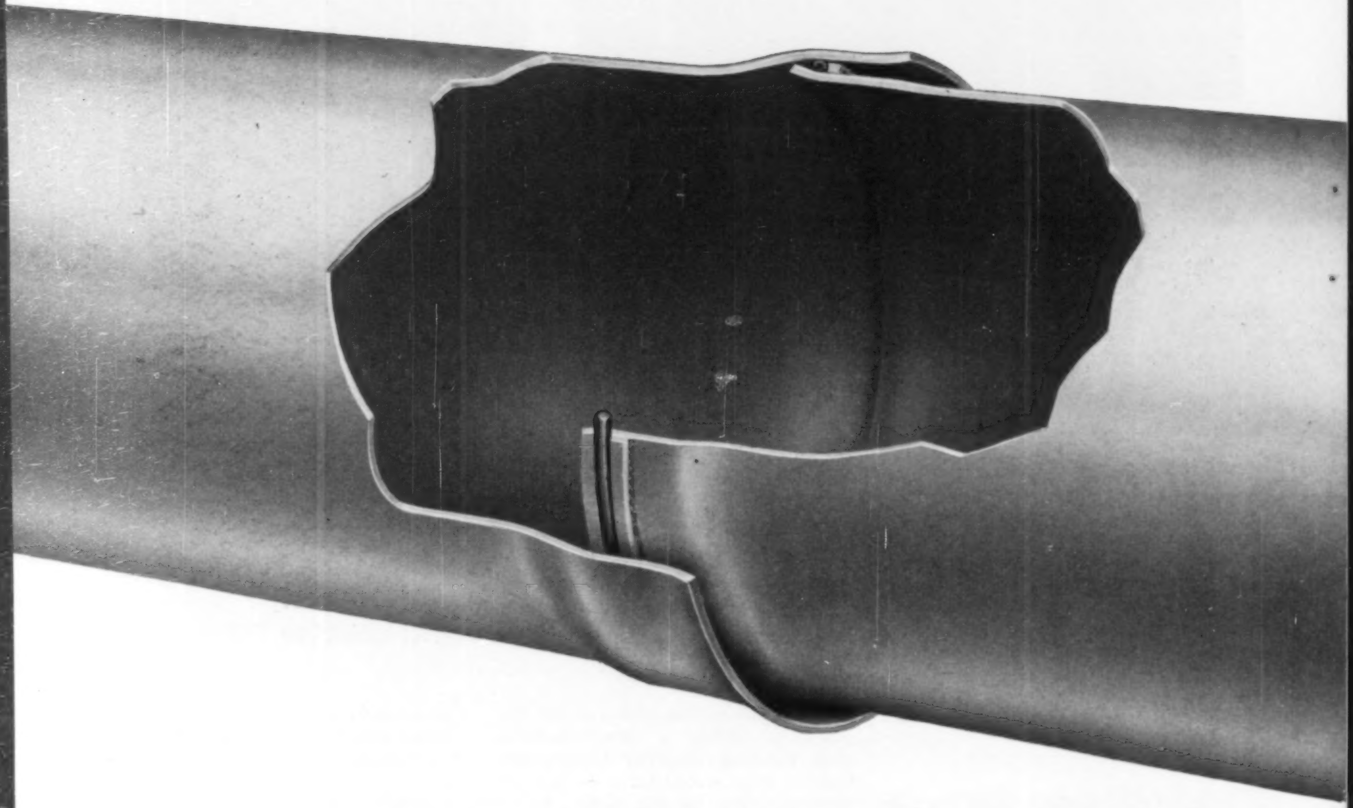
Later, the company prepared a photomosaic to the same scale and started compiling a street map which would show all streets, roads, drainage, and large public buildings. We ultimately received additional copies of the street map at a reduced scale of one inch to 800 feet for convenience in handling.

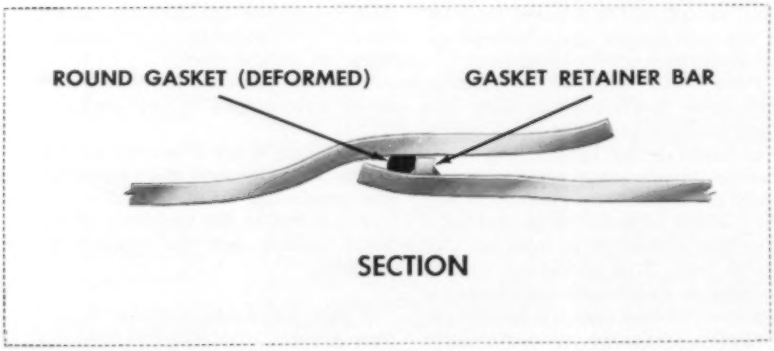
The company next began the compilation of the topographic map at a scale of one inch to 40 feet and with a two-foot contour interval. We received final maps on a permanent sheet suitable for high-quality paper reproductions using standard office equipment. Each map sheet is 24x36 inches and covers 22 acres.

The first immediate benefit of the mapping was in our city planning work. Last year the city retained Ladislas Segoe & Associates of Cincinnati to prepare a comprehensive plan report. Without these maps, the planners would still be struggling to obtain basic data.

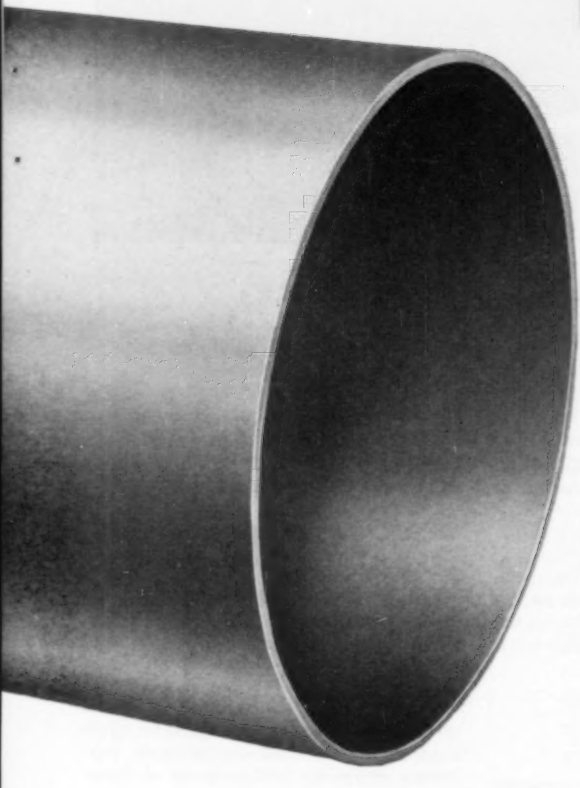
The next and most frequent beneficiary is the Engineering Department. For sewer work, the designers first pencil-trace the topographic features, together with coordinate lines, onto mylar plastic sheets. They

(Continued on page 177)




ROUND GASKET (DEFORMED)
GASKET RETAINER BAR
SECTION

Introducing Bethlehem's Bell-and-Spigot Joint, with Gasket



Here's a joint that promises new ease and speed of installation, added to the many well-known advantages of *steel* pipe.

We make it in diameters from 24 in. through 120 in., but if you have something a little smaller or larger in mind, let's talk it over.

And this joint is *tight*. We've tested it to over 450 psi (more than double ordinary working pressures) *and it didn't leak a drop*.

We can line and coat the pipe at the shop with top-quality coal-tar enamel, and wrap it if desired. This gives you the best, longest-lasting protection that money can buy, plus high flow capacity. But if other coating combinations are preferred, we'll supply the pipe to comply.

As with all steel pipe, every single 40-ft length undergoes a hydrostatic test well in excess of the design working pressure.

If you're thinking about installing a large-diameter water main, let us give you more information about our new Bell-and-Spigot Pipe. We suggest that you have a talk with the people at the Bethlehem sales office nearest you.

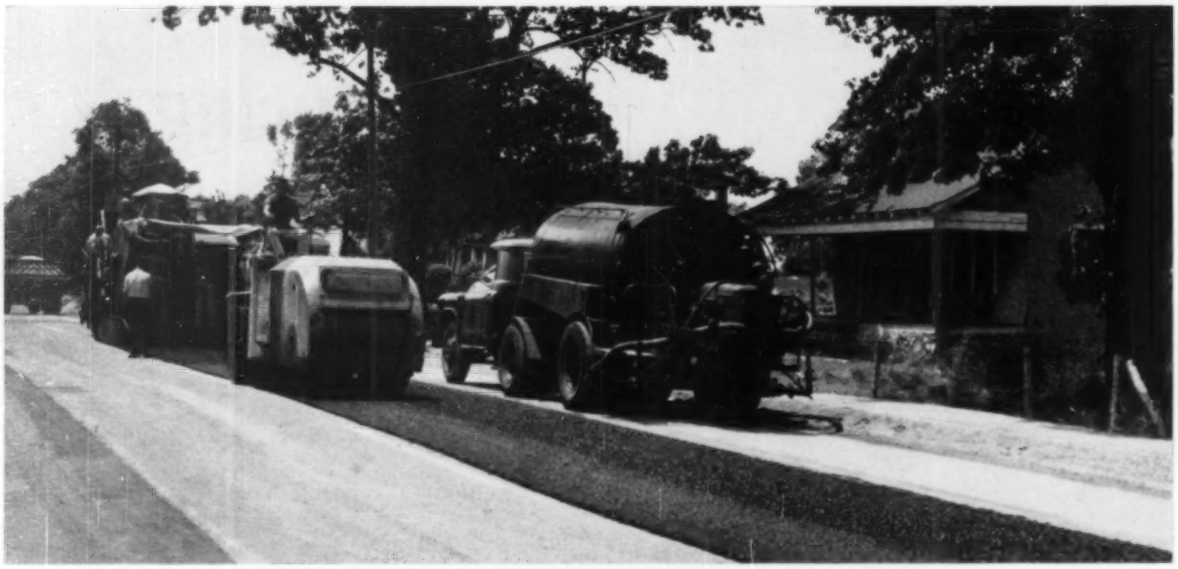
Steel

for Strength
. . . Economy
. . . Versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



Mixing and placing a Cationic Bitumuls "mat" with a Moto-Paver. Note how closely the roller follows the paver.

This is a completed Cationic Bitumuls Drag Seal Job.

North Carolina forces apply cover aggregate to a Cationic Bitumuls Split Seal on 8.1 miles of State Highway.

CATIONIC BITUMULS NOW USED BY 21 STATE HIGHWAY DEPARTMENTS

Here's why:

1. **Fast Initial Set even in adverse weather.**
2. **Better Adhesion even with "hard-to-coat" stone.**
3. **"Rain-Proof" Coating of Aggregate (resists wash-off in sudden showers.)**

Since 1958, when we first introduced Cationic Bitumuls, it has gained steadily in acceptance by State Highway Engineering Departments all across the nation. Now, in twenty-one of our fifty states this material is in actual use. It is being tested and evaluated by many more.

Here's how one State took to Cationics

In 1958, The State Highway Commission of North Carolina took delivery of 100,000 gallons of Cationic Bitumuls so that one of their fourteen Divisions could do experimental work. When the results were evaluated here's what they found:

1. Early rains didn't damage the work.
2. The roads could be opened to traffic sooner.
3. The surfaces held more cover stone.

Based on these performance reports, the Commission made Cationic material available to all fourteen Divisions. In 1959, they used a total of 4,000,000 gallons. Last year (1960) 8,500,000 gallons!

How Cationic Bitumuls is used in North Carolina

North Carolina uses Cationic Bitumuls for two basic types of work: Split Seal, Drag Seal (Double Surface Treatments), Single Seal, Triple Surface Treatments; and Moto-Paver Mixes. Aggregates used vary from one area to another but the principal ones are gravel, granite, slate and limestone. Cationic Bitumuls performs uniformly well with all of these.

Cities, too, adopt Cationics

Many cities in North Carolina have switched to Cationic Bitumuls for much of their street and road work, profiting by the experience of the State Commission.

This same process is going on all across the country as more and more engineers become familiar with the high-level performance of Cationic Bitumuls.

If you have not had an opportunity to check a Cationic Bitumuls job in person, call our nearest office. A Bitumuls Engineer will arrange for you to visit a job near you.

American Bitumuls & Asphalt Company

320 MARKET ST., SAN FRANCISCO 20, CALIF.
Perth Amboy, N. J.
Baltimore 3, Md.
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Atlanta 8, Ga.
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Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

(Continued from page 173)

then use these to make two prints, one for field use and the other for the office. A field party proceeds to locate street rights-of-way corners on the print, coordinating this with the map features. The men also spot septic tanks and note basement elevations to determine the correct depth of main lateral. The drafting department then transfers this to the office prints and locates property lines, lot numbers and names of owners.

We design street improvements in the same quick manner. Our engineers can obtain cross sections from the maps without the need for field surveys and entry onto private property.

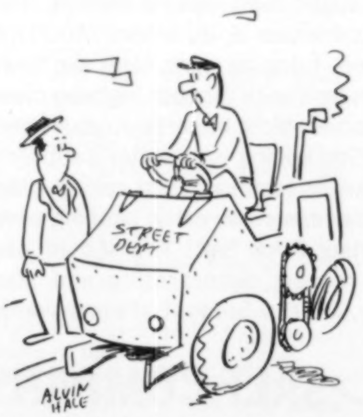
Other Uses

Administratively, we have used the map sheets to establish boundaries and locate city refuse-disposal sites. A local citizens' group is using them for future development of an existing park. The Park and Recreation Department is planning new parks, including the layout of ball diamonds and tennis courts with the maps. The Water Department uses them to plan water-main extensions, sites for new water towers, and reservoirs.

The aerial maps are a constantly used tool for our engineering department and provide a frequent source of information for the rest of the city.

They are confidence-winners for our local citizens who can see and understand a picture but become uncertain when they look at a blueprint.

First comes the aerial survey and, after the mapping, comes civic progress. ◄◄



We built it to save money but found it cost more than a real one.

NOW-SAFER, LESS EXPENSIVE BRUSH DISPOSAL

1
2
FITCHBURG CHIPPER

FITCHBURG CHIPPER

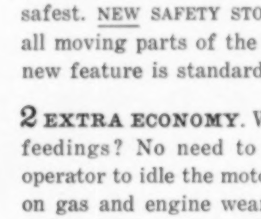
adds 2 new important features

1 EXTRA SAFETY. The Fitchburg Chipper is *already considered* safest. NEW SAFETY STOP SWITCH gives *extra* protection—stops all moving parts of the chipper *within seconds*. This important new feature is standard equipment on all new models.

2 EXTRA ECONOMY. Why pay the full gas bill *between* brush feedings? No need to with NEW SOLENOID SWITCH*—allows operator to idle the motor when he's not feeding brush. You save on gas and engine wear, even get quieter operation. This new switch is easy to reach from normal feed position.

Insist on a chipper which gives you these major advances in safety and economy—specify FITCHBURG CHIPPER. This rugged, well-engineered machine chips smoothly and *fast*. Exclusive *spring-activated* feed plate gives you a positive feed with less whipping of the brush. Special alloy blades retain keen edge for a long time. You'll have less brush disposal headaches when you specify FITCHBURG. There's a model to fit your needs. Send coupon for more facts.

*Optional



FITCHBURG ENGINEERING CORPORATION
Fitchburg, Mass. Dept. AC-110

Please send free facts about Fitchburg Chippers, models, and prices.

Name________________________________
Address______________________________
City____________________ State________

JUST AROUND THE CORNER

WINTER!

Be prepared for snow, sleet, freezing rain

ORDER STERLING ROCK SALT—NOW!

You know what happens when a community is caught short without Sterling Rock Salt on hand when winter storms hit. Business freezes in its tracks. Accidents mount. ■ Early winter storms can strike in October—bringing snow, sleet and freezing rain. Having Sterling Rock Salt on hand means less work for your highway crews and equipment when they are battling early storms. Most important, you'll keep traffic flowing safely, business going normally. ■ Stockpiling your winter's supply of Sterling Rock Salt is practical. Sterling Storite keeps rock salt from caking either in outside or inside storage. ■ **Remember—winter can come early! Nothing saves lives, money and prevents accidents like Sterling Rock Salt! You should have Sterling Rock Salt on hand!** ■ Contact our nearest district office and place your order now! International Salt Company, Clarks Summit, Pennsylvania.

INTERNATIONAL STERLING SALT SALT COMPANY

THE ONLY SAFE PAVEMENT IS A BARE PAVEMENT

District Offices: Boston, Buffalo, Charlotte, Chicago, Cincinnati, Detroit, Newark, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis

On Monroe Street in the City of Rockville, Md., a Barber-Greene spreader and Huber-Warco 8-10 ton roller allow traffic to proceed on one side of the street while they lay "Smooth-Seal" on the other side.

Our Cure for Street Headaches

By **JOHN GRAY**
Director of Public Works
Rockville, Md.

Growing pains—Rockville's population has soared from 6,700 in 1950 to 27,500 today—strained the city's budget. One of the tight spots was maintaining the 76 miles of streets and roads within the city limits.

A "smooth-seal" treatment, with which we have been experimenting for two or three years, has helped. With my Scotch background I like to stretch the municipality's dollar a long, long way.

"Smooth seal" has attracted state, county and city officials from hundreds of miles. It is a thin coating of dense-mix bituminous concrete, ½" to ¾" thick, applied under high pressure and high penetration, so that it "seals up" deteriorating roads.

Close control of mixtures is vital to the success of the process. Frequent samples of the pavement are taken by our office and rigid control of mixtures is exercised during all phases of the work.

Specifications for asphalt require it to be 50% sand and 50% stone screenings with an average content of 6.5% to 8% of 120-150 penetration asphalt.

The existing pavements are completely patched out prior to the application of the coating and approximately 0.10-0.15 gallon per square yard of AE-4 is applied as a tack coat for the surface course.

The average coat laid in place per square yard worked out to be approximately 30 cents, based on a rate of 30 square yards per ton. This price includes the laying of the tack course. Different prices on this material submitted to the City of Rockville were $8.50, $10.15, and $8.74 per ton laid in place, the last figure of $8.74 being on the highest quantity of material supplied at one time, 2,500 tons.

The resulting pavement serves multiple purposes. First, it fits in with hard-pressed municipal-budget requirements by being available at lowest cost. Second, it halts damage to roads needing major repair but which, for budgetary reasons, cannot be completely rebuilt at once. It is particularly valuable in sealing roads to keep moisture out of the subbase, which might otherwise cause the road to "heave."

Smooth-seal is that stitch in time. An advantage of its thinness is that curbs and gutters are not "lost" in the resurfacing.

To date, the material has held up remarkably well considering the severity of last year's winter. Of nine miles laid in the city only three failures have shown to date. These failures can be attributed to base conditions.

The surface of the material has proved to be quite skid resistant, yet it is hard enough to resist scarring by snow chains.

The material is laid by a Barber-Greene or a Cedar Rapids asphalt spreader. On one occasion, because of the rapid lowering of temperatures of the asphalt during laying operations in November, it was difficult to maintain a good center-of-the-street joint. Therefore, two asphalt spreaders were run side by side with only approximately ten to 15 yards differential in spacing, one behind the other. This provided a much better joint for the heat was not dissipated by the time the second asphalt strip was laid alongside the first.

The life expectancy of the smooth, easy-riding surface is eight to ten years in suburban traffic. ◄◄

BEHIND THE MAN FROM DIAMOND CRYSTAL SALT...
the snow & ice removal experience of Blake Jordan!

DAVID P. THOMPSON

Blake Jordan, Manager, Rock Salt Sales—Highway Division, Diamond Crystal Salt Company, is a fine example of home office assistance given the "Man from Diamond Crystal". On-the-spot experience and the understanding of problems by home office officials, helps Diamond Crystal salesmen serve your needs more efficiently.

Pictured above is Blake, supervising the unloading of Rock Salt for snow and ice removal onto a new storage depot at Buffalo, New York. In addition to the Buffalo depot, Diamond Crystal Salt Company has opened other strategically located Rock Salt Storage Depots throughout the snow and ice belt. These new depots can help you maintain maximum safety precautions by supplying all your salt for snow and ice removal . . . fast and economically.

Here are the locations:

- Buffalo, New York
- Charleston, West Va.
- Chicago, Illinois
- Cincinnati, Ohio
- Cleveland, Ohio
- Detroit, Michigan
- East Liverpool, Ohio
- Green Bay, Wisconsin
- Holland, Michigan
- Louisville, Kentucky
- Marietta, Ohio
- Milwaukee, Wisconsin
- Port Huron, Michigan
- St. Clair, Michigan
  - Minneapolis, Minn.
  - Prairie du Chien, Wis.
  - Davenport, Iowa
  - La Salle, Illinois
  - Michigan City, Indiana
  - St. Louis, Missouri
  - Omaha, Nebraska

Learn exactly what these new storage depots can mean to you for fast, economical service. Call or write the nearest Diamond Crystal sales office.

Diamond Crystal Salt Company
ST. CLAIR, MICHIGAN

75th Anniversary 1886–1961

PLANTS: AKRON, OHIO; JEFFERSON ISLAND, LA.; ST. CLAIR, MICH.
SALES OFFICES: AKRON • ATLANTA • BOSTON • CHARLOTTE • CHICAGO
DETROIT • LOUISVILLE • MINNEAPOLIS • NEW ORLEANS • NEW YORK

ZONING AND PLANNING DECISIONS

Edited by NORMAN WILLIAMS, Jr.

Is a Lunch Counter A Restaurant in Miami Beach?

FLORIDA. *City of Miami Beach* v. *Royal Castle System*, 126 Southern (2d) 595 (District Court of Appeal (intermediate court), January 31, 1961).

In this case an organization running a chain of lunch counters proposed to establish one of its hamburger stands in what was described as the "highest type" of business area in Miami Beach; the local board of adjustment refused to approve the establishment on the ground that it did not come under the category of a "restaurant," which was a permitted use in the district. Apparently the proposed establishment would be a typical short-order house, with ten seats at the counter. The Court reversed the Board's opinion and held that this was permitted as a restaurant.

The City Attorney's brief to the contrary, quoted in the opinion, reads in part as follows:

> "'It is, of course, unnecessary for a food establishment to be an Antoine's or a Maxim or to reflect the aura of candlelight and the rustle of silken gowns to achieve the status of a restaurant.
>
> "'However, the concept can scarcely be expanded to include an operation devoted to the mass production and consumption of the commodity known as the hamburger. The circumstance that the item is possessed of qualities of superb merit, and is purveyed in surroundings of lavish decor must be regarded as adventitious. Bereft of those qualities such an establishment would not be in harmony with virtually the highest type of business zoning in the City of Miami Beach, within which the desired location is situate.'"

Non-Residential Redevelopment Area Concept—Demolition of Substantial Office Building

MINNESOTA. *Housing and Redevelopment Authority in and for City of Minneapolis* v. *Minneapolis Metropolitan Co.*, 104 North Western (2d) 864 (Supreme (highest) Court, August 5, 1960).

In this case, a redevelopment area in Minneapolis, covering about 20 city blocks, excluded certain specified parcels and buildings from demolition, but specifically included the "Metropolitan Building." This was a 12-story steel and masonry office building built in 1890 with a large open court. After a considerable controversy on the question of its inclusion, the Redevelopment Authority decided that there was no way to preserve the structure, with its rather old-fashioned exterior and still carry out the proposed redevelopment plan. The redevelopment plan was designed for commercial and light industrial uses on the edge of downtown. The court upheld the redevelopment for such purposes and the Authority's right to condemn the structure and demolish it.

In the opinion, the court emphasized that

> ". . . while the exhibits show that there is merit in the structure as an historical piece, nevertheless it seems clear that the building is indisputably out of date and would to some extent be out of place in the project area. However, it is clear that the record shows no evidence that the building is structurally unsound."

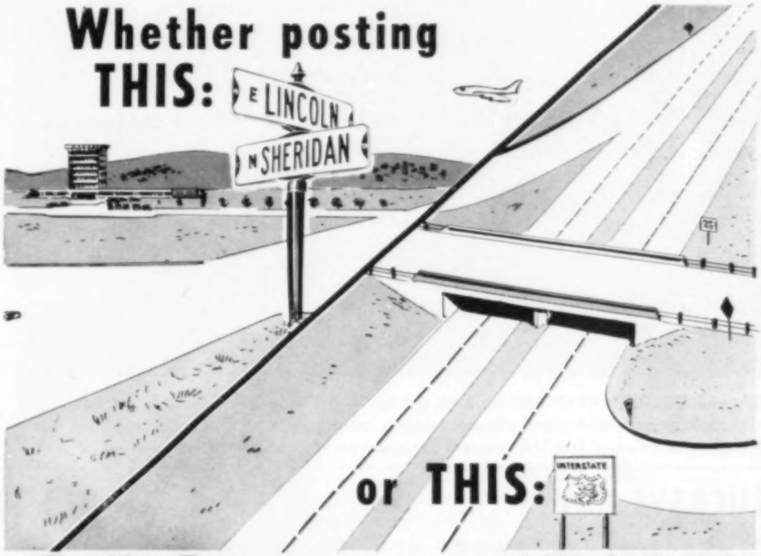
One judge concurred, specially—arguing that the redevelopment authority had not provided a feasible relocation plan for the residents of the area but noting that the owner of an office building had no standing to raise the issue.

Swimming Pool and Enclosure as a "Building" In a Front Yard

FLORIDA. *Union Trust Co.* v. *Lucas*, 125 Southern (2d) 582 (District Court of Appeal (intermediate court), Dec. 16, 1960).

This case involved a proposed swimming pool and "screened enclosure" in

(Continued on page 183)



Traffic Engineers turn to MIRO-FLEX

New Cut-Out Letters, Numbers, Shapes, Borders for Easy Signing

Miro-Flex offers a wide variety of pre-cut, aluminum individual letters, arrows, numerals, borders, corners, and shapes. Furnished plain or with choice of plastic lenses, reflective sheeting or unfinished. Conform to Bureau of Public Roads' and the American Association of State Highway Officials' standards. Make signs in your shop, or on-site, to interstate specifications.

Complete Line of Traffic Control Signs

Miro-Flex embossed signs are easier to read, have added strength and rigidity. Outlast ordinary flat-surface signs by far. Miro-Flex quality finish is baked on to withstand weather wear. Available plain or reflectorized with moisture-proof beads, reflective sheeting or plastic lenses. Miro-Flex is the finest traffic control sign buy. Competitive makes are . . . rarely as attractive . . . never so enduring.

YIELD
RIGHT OF WAY
KEEP
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DIP
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E LINCOLN
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NO
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THE **MIRO-FLEX** CO., INC.

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Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse
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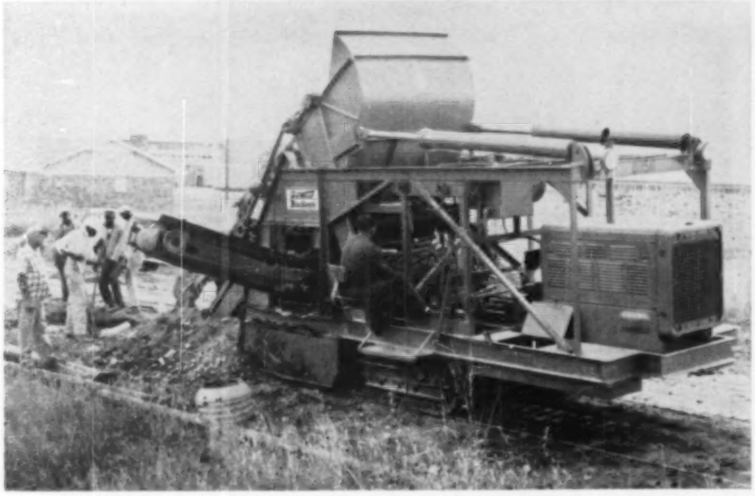
DALLAS PICKS GAR WOOD FOR MUNICIPAL DITCHING



DALLAS USES BUCKEYE 160 for high productivity. The machine features an adjustable telescopic boom with hydraulic down pressure, power-shift conveyor, and individual steering of each crawler. The 160 reverses for undercutting and tunneling.

BUCKEYE 407 GIVES DALLAS FAST, ECONOMICAL DITCHING

When Dallas needs maneuverability—for digging past aboveground and around underground obstructions—they turn to their Gar Wood-Buckeye 407. Several advanced features make the 407 today's most modern ladder-type utility ditcher. One is the live hydraulic boom hoist and crowd, instantly controlled by a single lever. Another is the conveyor, shifted electrically by pushbutton. A third is the Hi-Lo traction shift, that permits forward or reverse digging speeds to be instantly increased or reduced 50% without disengaging the main engine clutch.

Features like these—standard equipment on the 407—make Gar Wood-Buckeye the outstanding choice for municipal utility ditching.

Water Department Speeds Construction with 4 Buckeye Ditchers

In Dallas, Texas, more office buildings have been built since the War than any other U. S. city except New York. To keep pace with this boom, the city uses four ditchers for non-contracted work. All four are Gar Wood-Buckeyes.

The city alternates these machines in various types of terrain. A Buckeye 308, most advanced wheel-type ditcher on the market, is employed when the digging is through hard limestone rock. A Buckeye 407 is used for deep digging. Two Buckeye 160's are used for all-purpose ditching in all types of soil.

The success the City of Dallas has had with Gar Wood-Buckeye ditchers is typical of the high-production, low-maintenance performance these machines are giving municipalities across the country. For more than 60 years Gar Wood-Buckeye has led the field with design standards, engineering developments, and the finest service organization in the industry.

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan
Findlay, Ohio

(Continued from page 181)

the front yard of an apartment building in St. Petersburg Beach. A building permit for the enclosure was revoked, on the ground that this would be a "building," and therefore would violate the set-back provisions in the zoning ordinance. The legal question therefore turned on whether or not the proposed construction was a building. The zoning ordinance did not bother to define the word "building." The court held that at least the "screened enclosure" would involve a building, and therefore would violate the ordinance, and that the ordinance was not void for vagueness on this point.

Here again the problem arises from sloppy legal draftsmanship. A zoning law should define clearly what structures are permitted in the various required yards; and the definitions should distinguish a "building" from other types of "structures," if the two are to be treated differently in any respect.

50-Year-Old Plans Read Like New

Planning goals have not changed as much as many think. For example, Reading, Pa., recently reviewed its planning program and discovered 12 recommendations made by their consultant, John Nolen, in 1910. His half-century-old advice sounds remarkably like the "new" principles being advocated today. His 12 most necessary improvements were:

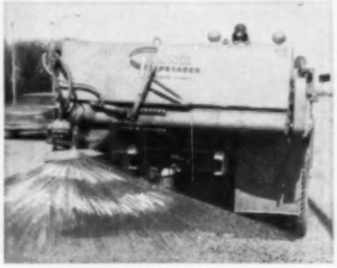
1. To adopt a more thoughtful and up-to-date method of locating and improving streets.
2. To remove from the main streets all wires, poles, and other obstructions.
3. To take prompt and vigorous steps for smoke abatement.
4. To extend the city limits, by annexation, to include all land within the proposed Belt Boulevard.
5. To add to the convenience, comfort and beauty of Penn Square by the construction of a central mall or narrow park strip.
6. To proceed at once to make the best possible grouping of public and semi-public buildings.
7. To lay out a comprehensive system of thoroughfares and boulevards, including diagonal avenues and a Belt Boulevard to encircle the city.
8. To provide for the gradual abolition of all grade crossings within the city limits.
9. To build across the Schuylkill River a series of bridges of a more appropriate type.
10. To secure at once for playground purposes as many open spaces as possible, especially in the settled sections of the city.
11. To get possession of the finest natural features around Reading and set them aside as public parks.
12. To investigate and report upon the improvement of housing conditions in Reading. ◀◀

Why 1000 Flink ice control spreaders are used in 2 states

Specifying engineers recommend Flink hydraulic tailgate model spreaders

When howling winter blizzards move into Pennsylvania and Illinois, paralyzing communities and turning highways into icy death traps, Highway Department crews move fast with over 1000 Flink ice control rigs to clear roads, keep traffic moving, and save lives.

Why so many Flink spreaders in these two states? Simply because Highway Department officials tried them, and found from their own experience, that Flink spreaders can move out—spread anything from salt to cinders—and make quick work of the worst road conditions. What's more, Flink spreaders do the same, efficient job year after year. In the summer, certain models double in seal coating and dust control, and are ideal for these uses as well as for ice control.


Model HDWS4 Single Spinner, Hydraulic Drive

Cab Control Saves Time

Take the Flink Model HDWS4 for example. A fleet of these hydraulic tailgate spreaders are on the job right now, keeping traffic rolling on the Illinois Tollway. Everything is handled by one man—right from the cab. The left side spinner permits easy 2 or 3-lane spreads in one pass with no waste on the shoulders. Two-speed auger controls, conserves material and permits instant change from abrasives to straight rock salt. This model, like all Flink Tailgate Spreaders, replaces the tailgate on any standard dump body and permits regular dump use of the box.

Heavy Duty Hopper Spreader

Flink Model LMC Spreader is built to handle salt, cinders and sand for heavy duty ice control and pea gravel and chips for seal coating. Features "Straight-in-line" drive and lets you change both conveyor and spinner speed in minutes. Flink LMC spreaders are available with PTO, hydraulic or gasoline engine drive, cab controlled.

Spreaders For Every Budget And Purpose

The spreaders mentioned above are only two of the complete Flink line. Other Flink models include HDWS5, a hydraulic drive, two spinner spreader; HD42, a self-feeding hydraulic drive model for seal coating and ice control; WD21, a low-cost chain drive spreader; Model SS, a traction drive, pull-type spreader; and Model HV, a seal coating spreader used for fleet use.

Specific information on Flink spreaders and Baker-Flink snow plows, including one-ways, reversibles, power reversibles and V's, can be obtained by mailing the coupon below.

THE Flink co.

FLINK COMPANY
5509 N. Vermillion St. • Streator, Illinois

☐ Please send your ice control and seal coating literature
☐ Please send me latest specifications and catalog on your snow plows

NAME.......................................
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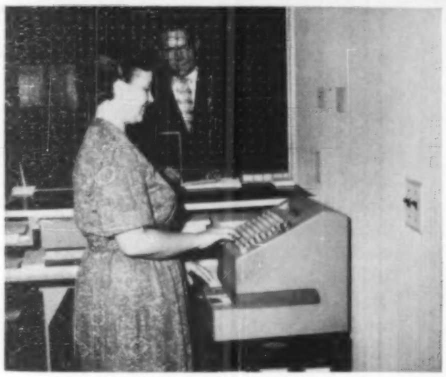
THIS NATIONAL SYSTEM pays for itself in less than two years.



COMPLETE RECORD CONTROL is provided by this National System.

HAROLD E. SAUNDER, JR., COLLECTOR-TREASURER, Township of Morris, Morristown, N. J.

"The *National* Accounting System saves us $4,800 a year...

returns 61% annually on investment!"—Township of Morris, Morristown, N. J.

"Our National Accounting System proved its value the first month. Before installing it, we were as much as a week behind in posting. With the National, all records are posted up-to-date and at a saving of $400 monthly compared to our previous method.

"Our employees are enthusiastic supporters of the System. It is so simple to operate and record, and statement handling is so easy that it required less than a week to train an operator. This National handles all tax billing, cash receipts, accounts payable and receivable, plus payroll. The increased amount of information we now receive quickly and accurately has made the National invaluable. We have better internal control than ever before.

"In dollars and cents, our National Accounting System saves $4,800 a year, returning 61% annually on our investment. It is one of the best investments we have ever made!"

Harold E. Saunder Jr.

Collector-Treasurer
Township of Morris, Morristown, N. J.

Your city, too, can benefit from the many time- and money-saving features of a National System. Nationals pay for themselves quickly through savings, then continue to return you a regular yearly profit. National's world-wide service organization will protect this profit. Ask us about the National Maintenance Plan. (See the yellow pages of your phone book.)

*TRADE MARK REG. U. S. PAT. OFF.

*National**

ACCOUNTING MACHINES
ADDING MACHINES • CASH REGISTERS
ELECTRONIC DATA PROCESSING
NCR PAPER (NO CARBON REQUIRED)

THE NATIONAL CASH REGISTER COMPANY, Dayton 9, Ohio
1039 OFFICES IN 121 COUNTRIES • 77 YEARS OF HELPING BUSINESS SAVE MONEY

LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Contracts—Contractor Failed to Complete Work by Time Required—Liable For Liquidated Damages

Where contractor, when he entered into contract, was aware that needed materials might not be available, unavailability of materials would not excuse contractor from liability for liquidated damages for failure to complete work by time required by contract. *Kelly* v. *Board of Education of City of New York*, 168 NE.2d (N.Y., Apr. 28, 1960)

Discrimination—Restaurants—Not State Action

Rights of Negro under 14th Amendment not denied on ground that segregation of races in restaurants was result of action by state since segregation of races is not required by any statute or decisional law of state. *Slack* v. *Atlantic White Tower System, Inc.*, 181 F. Supp. 124 (Md., D., Feb. 16, 1960)

Obscene Publications—Magazines Held Obscene

Magazines depicting nude women whose buttocks and breasts were prominently and conspicuously displayed in various poses were "obscene," but held that in absence of showing as to bookstore proprietor's knowledge of obscene nature of such magazines, he could not be convicted under Penal Law. *People* v. *Bunis*, 198 N.Y.S.2d 568 (N. Y., City Ct., Buffalo, Mar. 23, 1960)

Ordinances—Larceny—City Did Not Have Power to Adopt

Ordinance to effect that it shall be unlawful to cause any person to take and carry away or to attempt to take and carry away, with intent to steal or purloin or convert to his own use or possession, anything of value to the owner involved matter of statewide concern covered by state statute with respect to larceny and home rule city did not have power to adopt and enforce such ordinance. *Gazotti* v. *City and County of Denver*, 352 P.2d 963 (Colo., June 6, 1960)

Permits—Issuance of Building Permit to College Upheld

Upheld decision of board of zoning appeals granting college contingent use to permit construction of buildings for educational purposes. *McArdle* v. *Board of Zoning Appeals of Fort Wayne*, 167 N.E.2d 608 (Ind., App. Ct., June 7, 1960)

Streets—Closing of—Damages Denied

Property owner having no private right in and over railroad crossing was not entitled to damages because of closing of street at that point which did not result in closing of street in front of its property. *Farmers & Merchants Comp. & W. Co.* v. *City of Dallas*, 335 S.W.2d 854 (Tex., Civ. App., Dallas, Apr. 22, 1960)

Traffic—Ordinance Limiting Use of Highway Invalid

Held, effect of state statute was to authorize use of highways of state by all vehicles not exceeding 45 feet in length, and city ordinance, prohibiting use of portion of highway within city limits by vehicles exceeding 33 feet in length was invalid. *City of St. Louis* v. *Stenson*, 333 S.W.2d 529 (Mo., St. Louis Ct. App., Mar. 15, 1960)

Taxation—Charitable Institution-Corporation Not Exempt

Where corporation without capital stock engaged in business whereby it issued, to customers approved by it, contracts for stated cash premium obligating it to pay for limited time limited amount toward hospital bills, held corporation was not institution of purely public charity and was not entitled to tax exemption. *United Hospitals Service Ass'n.* v. *Fulton County*, 114 S.E.2d 524 (Ga., May 5, 1960)

Tort Liability—Sign Placed on Sidewalk—City Liable

Where city allowed maintenance of recruiting sign on sidewalk in place where crowds gathered, obscuring sign's base and thereby making sidewalk unsafe, and theatre caused crowd to accumulate around sign outside its door, held a submissible case was shown against both theatre and city. *Sutton* v. *Fox Missouri Theatre Company*, 336 S.W.2d 85 (Mo., Div. 1, June 13, 1960)

YOU CAN SAVE YOUR ELMS

and save money for your community

Even if your community is in an area already infected with Dutch elm disease, it's not too late to save elms not yet infected.

Leading authorities recommend that a single annual dormant spray should be applied at any time following leaf fall and before emergence of leaves in spring. Remember—it's much less costly to have Davey spray and save, than to cut down dead elms and burn them.

Davey's trained, experienced men, using the finest modern equipment and long-proved techniques, can do the best job of saving your elms—and your community's money. Davey representatives will be glad to supply prompt information concerning the control of Dutch elm disease in your area. Let the Davey Tree Expert Company help keep your community attractive to industry and residents by protecting your grand old elms and other trees.

Write direct to F. F. Lofgren, Sales Manager

Services Davey will provide your community

Pruning

Highway Spraying

Mist Spraying

Disposal of Pruned Branches with Chipper

DAVEY TREE EXPERT CO.

DAVEY TREE EXPERT CO.
Kent 16, Ohio
MARTIN L. DAVEY, JR.
President

THE OLDEST AND LARGEST TREE SAVING SERVICE IN THE WORLD

RECENT CITY MANAGER APPOINTMENTS

**R. W. Palmer, Jr.
Waldoboro, Maine**

**E. H. Potthoff, Jr.
Saginaw, Mich.**

**C. C. Burnett
Columbia, S. C.**

**L. L. Smith
La Junta, Colo.**

**L. S. Cooper
Tempe, Ariz.**

**P. A. H. Franche
Shawinigan, Que.**

J. Walter Barham, manager of Coalinga, Calif., has been appointed manager of Coos Bay, Ore., succeeding Robert G. Kyle. Mr. Barham was previously city engineer of Coos Bay.

W. H. Batchelor, formerly assistant engineer and recently planning director, Rocky Mount, N. C., has been appointed manager of that city, succeeding Hugh B. Hines, Jr.

David J. Bauer, manager of Lititz, Pa., has been appointed manager of Wethersfield, Conn., succeeding Albert Gray, Jr.

T. W. Bloomfield, a member of the Farmville, Va., city council for 16 years, has been appointed manager of that city, succeeding Ernest L. Quisenberry.

Richard J. Bowen, manager of Bristol Township, Pa., has been appointed first manager of Long Branch, N. J. Mr. Bowen was previously manager of Wells, Maine.

Carey C. Burnett, manager of Albany, Ga., has been appointed manager of Columbia, S. C., succeeding Irving G. McNayr, now manager of Metropolitan Dade County, Fla. Mr. Burnett was previously manager of Valdosta, Ga., and city engineer of Thomasville and Newnan, Ga.

Lee R. Burton, assistant manager of Muskogee, Okla., has been appointed manager of Guthrie, Okla., succeeding Robert O. Whitchurch.

Louis S. Cooper, deputy chief administrative officer of Fresno, Calif., has been appointed manager of Tempe, Ariz., succeeding Art Bunger. Mr. Cooper was formerly administrative assistant in San Diego County, Calif.

James S. Evans, a local businessman, has been appointed the first city manager of Wrangell, Alaska.

Pierre A. H. Franche has been appointed engineer-manager of Shawinigan-Sud, Quebec, Canada, succeeding J. C. Jacques Heroux.

George R. House, Jr., manager of Bedford, Va., has been appointed manager of Forsyth County, N. C. Mr. House was previously manager of Emporia, Va.

Robert G. Kyle, manager of Coos Bay, Ore., for the past nine years, has been appointed manager of Klamath Falls, Ore., succeeding Gerard S. Vergeer. Mr. Kyle was formerly city engineer of North Bend, Ore.

Robert E. Layton, assistant manager of Miami, Fla., has been appointed first manager of Galveston, Texas. Mr. Layton was previously manager of Barre and Randolph, Vt., Danvers, Mass., Portsmouth, Ohio, and Gainesville, Fla.

Bruce W. Love, assistant manager of Royal Oak, Mich., has been appointed manager of that city, succeeding E. M. Shafter, who is retiring after 30 years of service in Royal Oak. Mr. Love was previously manager of Slater, Mo.

Kenneth R. Mahony, assistant manager of Shorewood, Wis., has been appointed manager of Galena, Ill., succeeding Ralph R. Johnson.

George M. Minturn, manager of Hanford, Calif., for the past ten years, has been appointed manager of Santa Rosa, Calif., succeeding Samuel B. Hood.

Orville F. Over, manager of Clarksburg, W. Va., has been appointed the first manager of Battle Creek, Mich. Mr. Over was formerly manager of Lititz, Pa., and Newark, Del.

Robert W. Palmer, Jr., has been appointed manager of Waldoboro, Maine, succeeding Willard Brown.

Edward H. Potthoff, Jr., manager of Niagara Falls, N. Y., has been appointed manager of Saginaw, Mich., succeeding C. A. Miller.

Homer D. Reed, manager of Valdosta, Ga., has been appointed manager of Pensacola, Fla., succeeding Oliver J. Semmes, Jr., who retired June 1. Mr. Reed was formerly budget officer and assistant to the managers of Corpus Christi and San Antonio, Tex.

Gerald R. Riso, assistant manager of Scarsdale, N. Y., has been appointed administrator of Englewood, N. J., succeeding Richard L. Black.

John C. Robertson, manager of Northville, Mich., for the past five years, has been appointed manager of Ferguson, Mo., succeeding Ellwood L. Koch. Mr. Robertson was previously on the staff of the Michigan Municipal League.

Samuel Sampson has been appointed manager of Las Vegas, N. M., succeeding W. Cramar Wells. Mr. Sampson was previously an engineer with a Texas engineering firm.

Wayne G. Sanborn, administrative assistant of Titusville, Fla., has been appointed first manager of Arcadia, Fla.

Larry L. Smith, manager of St. Mary's, Ohio, has been appointed manager of La Junta, Colo., succeeding Tom Russell who died on March 3rd, 1961.

Orin F. Nolting
Executive Director
International City Managers' Association

Long-Tenure City Managers

A total of 372 managers, or about one-fifth of all those active in the field, have been managers for ten years or more according to the International City Managers' Association. Among the 18, who will be honored at ICMA's meeting this year for more than 25 years of service, Charles A. Carran, East Cleveland, Ohio, has the longest service, 39 years. Following him is S. S. King, Rome, Ga., 38 years; George Liddle, Muskegon, Mich., 38 years; W. K. Willman, Pontiac, Mich., 37 years; J. C. Biggins, Newport News, Va., 36 years; J. L. Womack, Reidsville, N. C., 36 years; H. L. Burmeister, Shillington, Pa., 32 years; L. P. Cookingham, Fort Worth, Tex., 35 years; Warren D. Toyne, Hudson, Ohio, 31 years; C. A. Harrell, Cincinnati, Ohio, 31 years; M. E. Coleman, St. Marys, Kan., 31 years; Woodbury Brackett, Auburn, Maine, 29 years; Seth Burnley, Staunton, Va., 30 years; A. E. Taylor, Mt. Pleasant, Texas, 29 years; Clarence H. Elliott, Kalamazoo, Mich., 27 years; Don C. McMillan, Pasadena, Calif., 27 years; Lester C. Hollis, Needham, Mass., 27 years; and C. Lawton McCall, Miami Shores, Fla., 26 years. Thirty other managers will receive 20-year certificates, 84 will receive 15-year certificates, and 239, ten-year certificates. ◄◄

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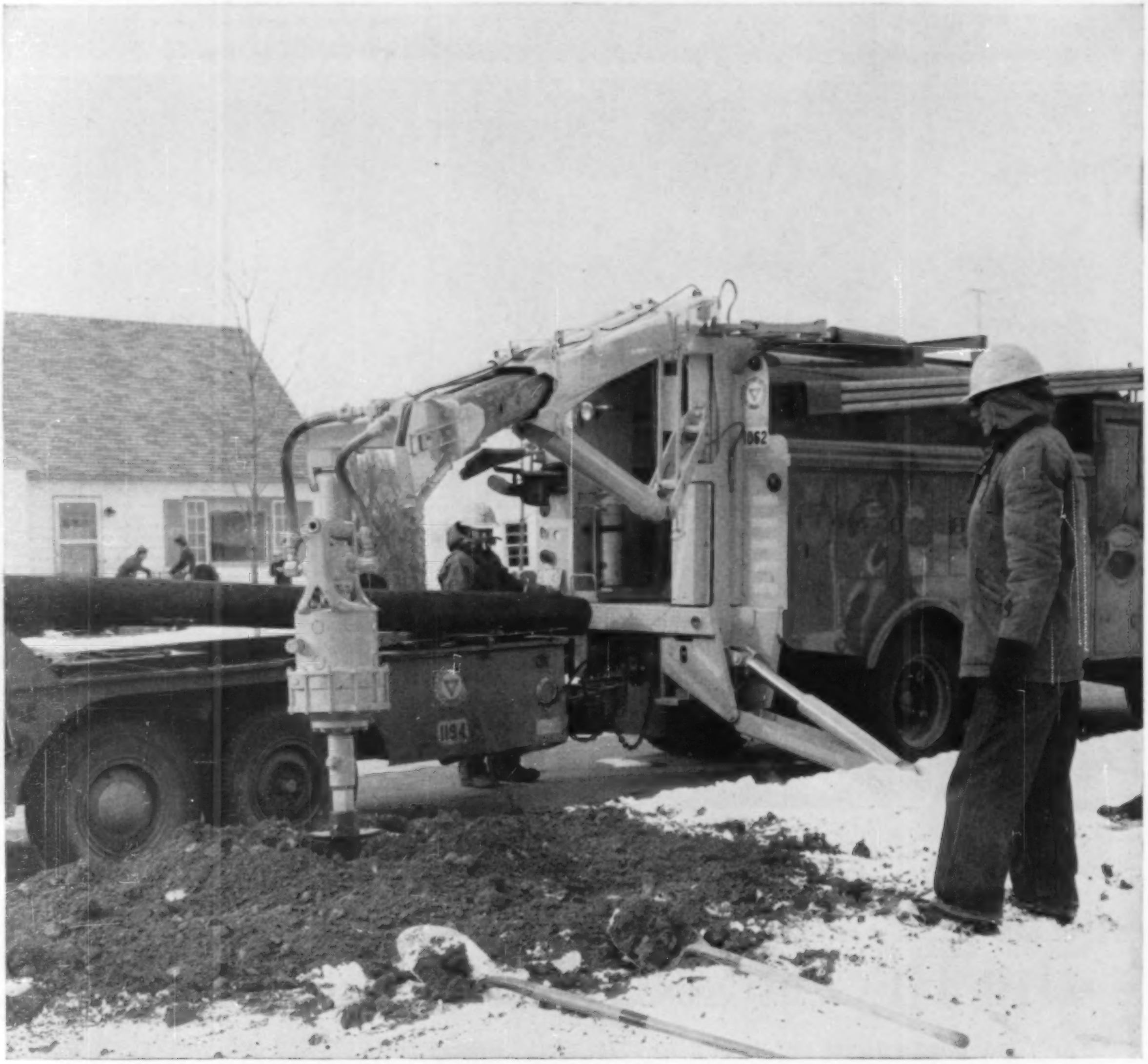

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CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

Oct. 8-10—Mandan, N. D.

League of North Dakota Municipalities. Annual Meeting (Lewis and Clark Hotel). Exec. Sec., H. L. Holt, Box 875, Bismarck, N. D.

Oct. 8-11—New York, N. Y.

National Institute of Governmental Purchasing. Annual Conference (Hotel Commodore). Exec. Vice-Pres., A. A. Hall, 1001 Connecticut Ave., N. W., Washington 6, D. C.

Oct. 8-11—Biloxi, Miss.

American Water Works Association—Alabama-Mississippi Section. Annual Meeting (Buena Vista Hotel). Sec., Ernest Bryan, San. Sales Mgr., McWane Cast Iron Pipe Co., Box 2601, Birmingham, Ala.

Oct. 8-11—Montreal, Que., Can.

International Assoc. of Assessing Officers. Annual Meeting (Queen Elizabeth Hotel). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago 37, Ill.

Oct. 9-11—Cincinnati, Ohio

International Municipal Signal Assoc. Annual Meeting (Hotel Netherland-Hilton). Conference Mgr., Irwin Shulsinger, 130 W. 42nd St., New York 36, N. Y.

Oct. 9-12—Milwaukee, Wis.

Water Pollution Control Federation. Annual Meeting (Milwaukee Auditorium and Schroeder Hotel). Exec. Sec., Dr. Ralph E. Fuhrman, 4435 Wisconsin Ave., Washington, D. C.

Oct. 9-13—Denver, Colo.

American Association of State Highway Officials. Annual Meeting (Denver-Hilton Hotel). Exec. Sec., A. E. Johnson, 917 National Press Building, Washington 4, D. C.

Oct. 10-13—Halifax, Nova Scotia, Can.

Community Planning Assoc. of Canada. Annual Meeting (Nova Scotia Hotel). Nat. Dir., Maj. Gen. M. L. Brennan, 425 Gloucester St., Ottawa, Canada.

Oct. 11-13—Madison, Wis.

League of Wisconsin Municipalities. *Joint Meeting with*—Engineering & Public Works Institute. Annual Meeting (Hotel Loraine). Exec. Dir., Ed Johnson, 30 E. Johnson St., Madison 3, Wis.

Oct. 15-18—San Antonio, Texas

American Water Works Association—Southwest Section. Annual Meeting (Granada Hotel). Sec.-Treas., L. A. Jackson, Robinson Auditorium, Little Rock, Ark.

Oct. 15-18—Portland, Ore.

League of Oregon Cities. Annual Meeting (Multnomah Hotel). Exec. Sec., Herman Kehrli, P. O. Box 5177, Eugene, Ore.

Oct. 16-19—Dallas, Texas

American Transit Association. Annual Meeting (Adolphus and Baker Hotels). Gen. Sec., A. W. Baker, 355 Lexington Avenue, New York 17, N. Y.

Oct. 16-20—New York, N. Y.

American Society of Civil Engineers. Annual Meeting (Statler-Hilton Hotel). Exec. Sec., William H. Wisely, 33 West 39th St., New York 18, N. Y.

Oct. 16-20—Chicago, Ill.

National Safety Congress. Annual Meeting (Conrad Hilton Hotel). Sec.-Treas., R. L. Forney, 425 N. Michigan Ave., Chicago 11, Ill.

Oct. 17-20—Los Angeles, Calif.

United States Civil Defense Council. Annual Meeting (Ambassador Hotel). Sec., Elliott R. Jackson, Municipal Auditorium, Atlanta 3, Ga.

Oct. 18-20—Cedar Rapids, Iowa

American Water Works Association—Iowa Section. Annual Meeting (Roosevelt Hotel). Sec., Wilbur E. Bjork, Service Supt., Des Moines Water Works, 1003 Locust St., Des Moines, Iowa.

Oct. 19-20—Des Moines, Iowa

League of Iowa Municipalities. Annual Meeting (Hotel Fort Des Moines). Exec. Dir., Max A. Conrad, 308 Insurance Exchange Bldg., Des Moines, Iowa.

Oct. 19-21—Lima, Ohio

Street Maintenance and Sanitation Officials of Ohio. Annual Meeting (Hotel Argonne). Exec. Sec., Evelyn M. Murgatroyd, 71 N. Union Street, Akron 4, Ohio.

(Continued on page 191)

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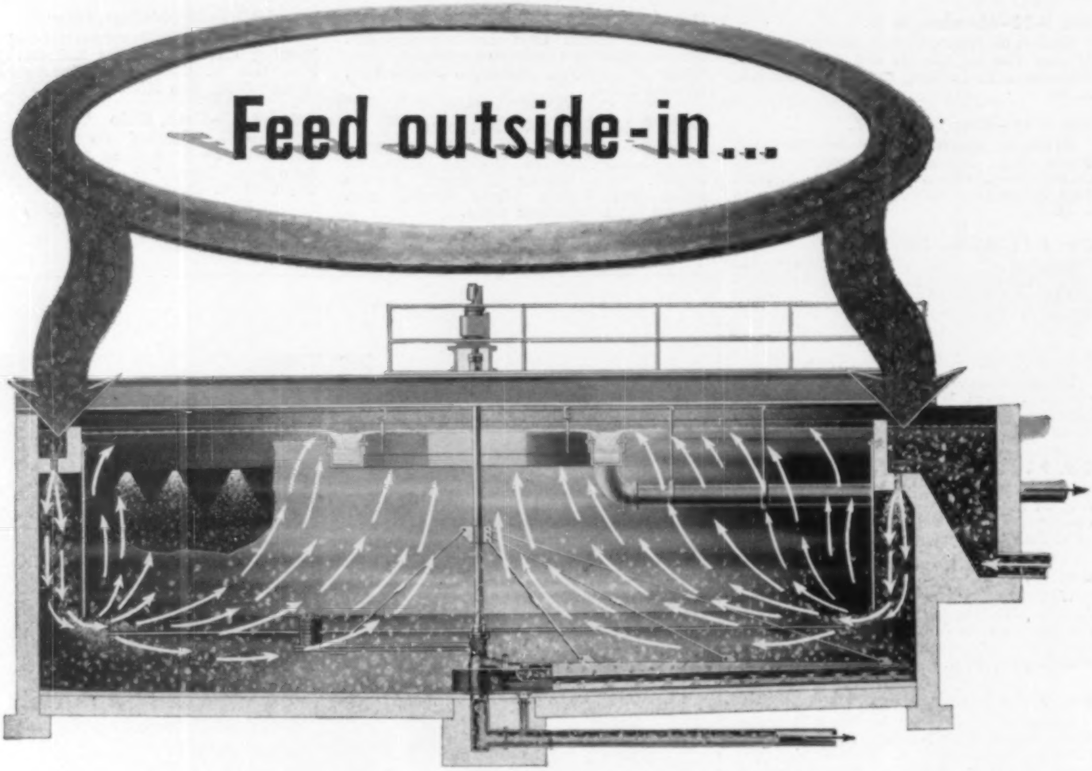

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Conventions—When and Where

(Continued from page 189)

Oct. 22-24—Jacksonville, Fla.

Florida League of Municipalities. Annual Meeting (Robert Meyer Hotel.) Exec. Sec., Gordon T. Butler, 218 W. Adams St., Room 301, P. O. Box 778, Jacksonville, Florida.

Oct. 22-24—Durham, N. C.

North Carolina League of Municipalities. Annual Meeting (Jack Tar of Durham Hotel). Dir., Davetta L. Steed, 1009 Raleigh Bldg., Raleigh, N. C.

Oct. 22-25—San Francisco, Calif.

League of California Cities. Annual Meeting (St. Francis Hotel). Exec. Dir. & Gen. Counsel, Richard Carpenter, Hotel Claremont, Berkeley 5, Calif.

Oct. 22-25—Montreal, Que., Can.

Canadian Institute of Sewage and Sanitation. Annual Meeting (Mount Royal Hotel). Sec.-Treas., Dr. A. E. Berry, 72 Grenville St., Toronto, Canada.

Oct. 23-27—Monticello, Ill.

Illinois & Indiana Water Works Management Short Course. Annual Meeting (Allerton House). Short Course Supervisor, Hugh Davison, 1166 Illini Hall, Champaign, Ill.

Oct. 25-27—Toledo, Ohio

American Water Works Association—Ohio Section. Annual Meeting (Perry Hotel). Sec., J. H. Bass, Henry P. Thompson Company, 4866 Cooper Road, Cincinnati, Ohio.

Oct. 25-27—Sacramento, Calif.

American Water Works Association—California Section. Annual Meeting (Senator Hotel). Sec.-Treas., Frank F. Watters, California Public Utilities Com., State Bldg., Civic Center, San Francisco 2, Calif.

Oct. 25-28—Tacoma, Wash.

Pacific Northwest Pollution Control Assoc. Annual Meeting (Winthrop Hotel). Sec.-Treas., G. H. Dunstan, Box 176, Pullman, Wash.

Oct. 25-28—Atlantic City, N. J.

American Water Works Association—New Jersey Section. Annual Meeting (Hotel Dennis). Sec.-Treas., A. F. Pleibel, 683 Prospect St., Maplewood, N. J.

Oct. 26-28—Kodiak, Alaska

League of Alaskan Cities. Annual Meeting. Sec., Lucy Mick, Box 1764, Palmer, Alaska.

Oct. 26-28—Cumberland, Md.

Maryland Municipal League. Annual Meeting (Fort Cumberland Hotel). Exec. Sec., Alan Beals, P. O. Box 276, College Park, Md.

Oct. 29-31—San Antonio, Texas

Texas Municipal League. Annual Meeting (Granada Hotel). Exec. Dir., Steve Matthews, 402 Vaughn Building, Austin, Texas.

Oct. 29-31—Wichita, Kan.

Kansas Association of Municipal Utilities. Annual Meeting (Broadview Hotel). Asst. Sec., A. D. McGuire, P. O. Box 99, Overland Park, Kan.

Oct. 29-Nov. 1—Washington, D. C.

National Assoc. of Housing and Redevelopment Officials. Annual Conference (Hotel Sheraton-Park). Exec. Dir., John D. Lange, 1313 East 60th St., Chicago 37, Illinois.

Oct. 29-Nov. 1—Orlando, Fla.

American Water Works Association—Florida Section. Annual Meeting (Cherry Plaza Hotel). Sec., John B. Miller, Dir., Div. of Water Supply, Bureau of San. Eng., State Board of Health, Box 210, Jacksonville 1, Florida. *Joint Meeting with—*

Florida Pollution Control Association. Sec.-Treas., Vincent D. Patton, State Board of Health, Box 210, Jacksonville 1, Fla.

Nov. 1-2—Northampton, Mass.

New England Water Pollution Control Assoc. Annual Meeting (Northampton Hotel). Secretary-Treasurer, Richard F. Greeley, 511 State House, Boston 33, Massachusetts.

Nov. 1-3—Baltimore, Md.

American Water Works Association—Chesapeake Section. Annual Meeting (Emerson Hotel). Sec., Carl J. Lauter, 6955 33rd St., N.W., Washington 15, D. C.

Nov. 4—Pittsburgh, Pa.

Pittsburgh Sanitary Engineering Conference. Annual Meeting (Graduate School of Public Health, University of Pittsburgh). Chairman, Dr. Eugene Weisberg, 1626 Forbes Ave., Pittsburgh 29, Pa.

Nov. 4-7—Springfield, Ill.

Illinois Municipal League. Annual Meeting (Hotel Leland). Dir., A. L. Sargent, 537 S. 4th St., Springfield, Ill.

(Continued on page 193)

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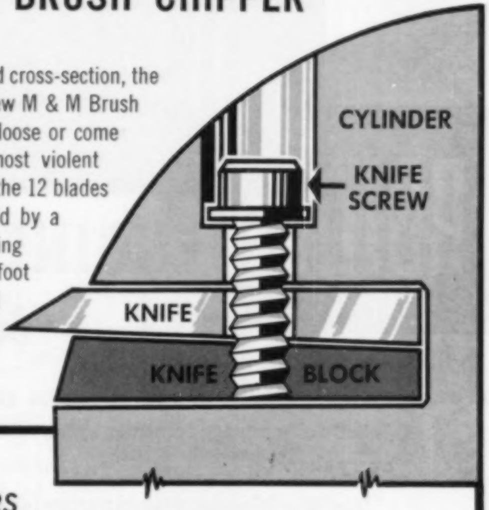

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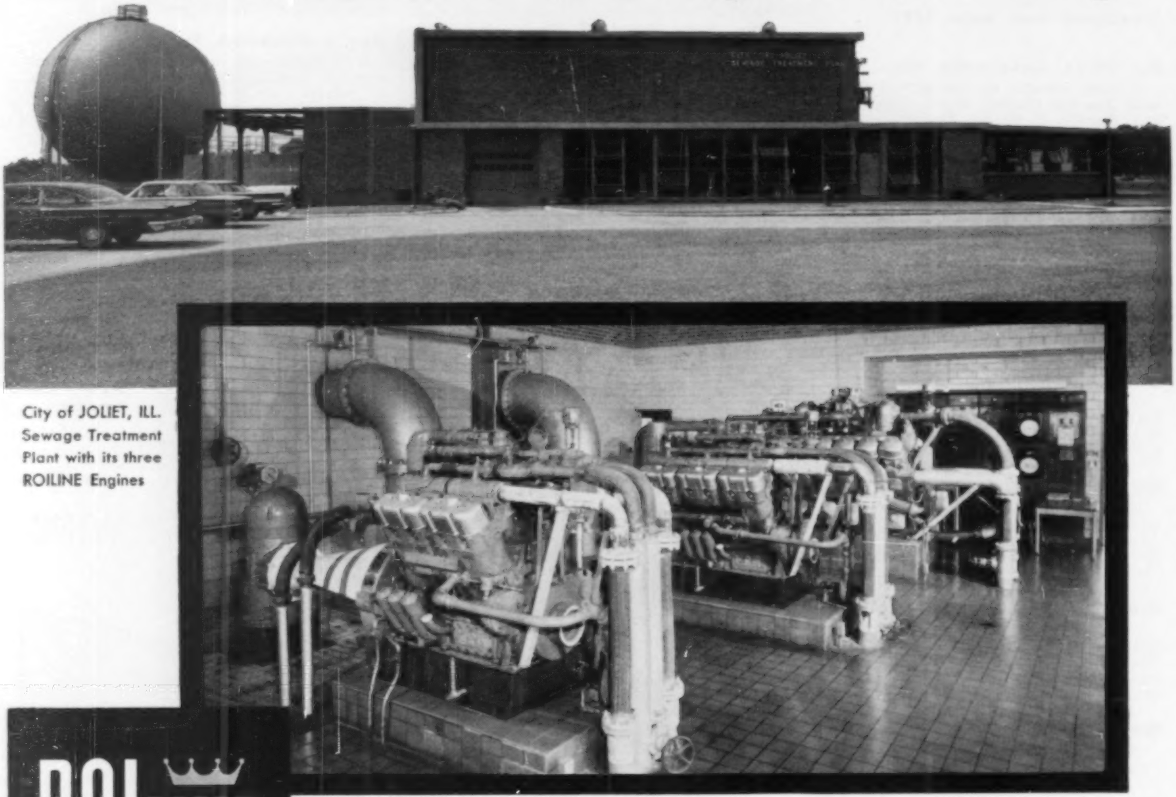

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Conventions—When and Where

(Continued from page 191)

***Nov. 8-9—Lincoln, Neb.**

NEBRASKA SEWAGE AND INDUSTRIAL WASTES ASSOC. Annual Meeting (Lincoln Hotel). Sec.-Treas., E. Bruce Meier, Kirkham, Michael & Assoc., 508 South 19th St., Omaha 2, Neb.

***Nov. 12-15—Asheville, N. C.**

NORTH CAROLINA WATER POLLUTION CONTROL ASSOC. Annual Meeting (George Vanderbilt Hotel). Sec.-Treas., T. Z. Osborne, Room 309, Municipal Bldg., Greensboro, N. C.

Nov. 12-17—London, England

PUBLIC WORKS & MUNICIPAL SERVICES CONGRESS. Annual Meeting (Olympia Hotel). Write: The Municipal Agency Ltd., 3/4, Clements' Inn, London, W. C. 2, England.

***Nov. 13-14—Hot Springs, Ark.**

ARKANSAS MUNICIPAL LEAGUE. Annual Meeting (Arlington Hotel). Exec. Dir., Glenn G. Zimmerman, 416 Maple Street, North Little Rock, Ark.

***Nov. 13-15—Asheville, N. C.**

AMERICAN WATER WORKS ASSOCIATION—North Carolina Section. *Joint Meeting with—*

NORTH CAROLINA WATER POLLUTION CONTROL ASSOC. Annual Meeting (George Vanderbilt Hotel). Sec., T. Z. Osborne, Asst. Dir. of Public Works, Greensboro, N. C.

Nov. 13-17—Detroit, Mich.

AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Meeting (Cobo Hall), Exec. Dir., Berwyn F. Mattison, M. D., 1790 Broadway, New York 19, N. Y.

***Nov. 14-17—Atlantic City, N. J.**

NEW JERSEY STATE LEAGUE OF MUNICIPALITIES. Annual Meeting (Haddon Hall). Dir., Robert H. Fust, 603 Trenton Trust Bldg., Trenton 8, N. J.

***Nov. 15-16—Indianapolis, Ind.**

INDIANA WATER POLLUTION CONTROL ASSOC. Annual Meeting (Hotel Washington). Sec.-Treas., Victor Wagner, 1330 West Michigan Street, Indianapolis, Indiana.

Nov. 26-30—Miami Beach, Fla.

INTERNATIONAL CITY MANAGERS ASSOC. Annual Meeting (Fontainbleau Hotel). Exec. Dir., Orin F. Nolting, 1313 E. 60th Street, Chicago 37, Ill.

Nov. 26-30—Detroit, Mich.

AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (Statler-Hilton Hotel). Exec. Dir., W. C. Dutton, Jr., Suite 410, 2400 16th St., N.W., Washington 9, D. C.

***Nov. 27-Dec. 1—Stillwater, Okla.**

OKLAHOMA WATER, SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Student Union, Okla. State University). Sec.-Treas., H. M. Crane, 3400 North Eastern, Oklahoma City 5, Okla.

Nov. 30-Dec. 2—Miami Beach, Fla.

NATIONAL MUNICIPAL LEAGUE. Annual Meeting (Fontainbleau Hotel). Exec. Dir., Alfred Willoughby, 47 East 68th St., New York 21, N. Y.

***Dec. 7-8—New York, N. Y.**

THE TAX INSTITUTE. Annual Meeting (Barbizon-Plaza Hotel). Exec. Dir., Mabel Walker, 457 Nassau Street, Princeton, N. J.

Dec. 11-14—St. Louis, Mo.

WEED SOCIETY OF AMERICA. Annual Meeting (Sheraton Jefferson Hotel). Bus. Mgr., Walter C. Jacob, Agronomy Dept., University of Illinois, Urbana, Ill.

***Mar. 4-7, 1962—San Francisco, Calif.**

AMERICAN ROAD BUILDERS ASSOCIATION. Annual Meeting (Sheridan-Palace Hotel). Exec. V. P., Louis W. Prentiss, 600 World Center Bldg., Washington 6, D. C.

***June 17-22, 1962—Philadelphia, Pa.**

AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Trade and Convention Center). Executive Secretary, Raymond J. Faust, 2 Park Avenue, New York 16, New York.

***Sept. 30-Oct. 3, 1962—New Orleans, La.**

AMERICAN PUBLIC WORKS ASSOCIATION—Annual Convention. Exec. Dir. Robert D. Bugher, 1313 E. 60th St., Chicago 37, Illinois.

***Sept. 30-Oct. 3, 1962—Boston, Mass.**

NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (The Statler Hilton Hotel). Sec., Joseph C. Knox, 73 Tremont St., Boston, Mass.

***Oct. 7-11, 1962—Toronto, Ont., Can.**

WATER POLLUTION CONTROL FEDERATION—Annual Convention (Royal York Hotel). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Avenue, N. W., Washington 16, D. C.

15 to 5 in Favor of Council-Manager Plan

Since May 1, fifteen cities have adopted the council-manager plan and five have voted not to adopt it, according to the International City Managers' Association. No cities, during this period, have decided to drop the plan. This makes 35 cities that have joined the council-manager ranks since the first of the year and a grand total of 1,791 that now operate under the council-manager system.

The municipalities adopting it since May 1, include:

- **Ark.: Texarkana (19,788)**
- **Calif.: Cudahy (11,000), La Mirada (25,000), San Jacinto (2,553).**
- **Colo.: Julesberg (1,840), Thornton (11,353).**
- **Fla.: Boynton Beach (10,467), Lake Park (3,589).**
- **Mich.: New Baltimore (3,159)**
- **New Jersey: Belleville (35,005).**
- **Ohio: Blue Ash (8,346), Eaton (5,016).**
- **Pa.: Abington (55,831).**
- **Tenn.: Calhoun (2,000), Cookeville (7,805).**

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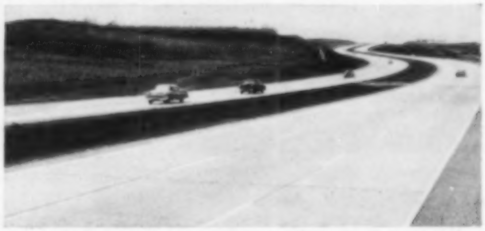

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MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Water Supply

WATER TREATMENT FOR INDUSTRIAL AND OTHER USES—*By Eskell Nordell. Reinhold Publishing Corp., 430 Park Ave., N. Y. 22, N. Y.* 1961. 597*pp*. $12.

One of the most comprehensive texts on the subject of water supply offered to the field today, written with clarity and occasional slight touches of humor. The author even presents chemical reactions both in scientific notations and in ordinary English. This second edition introduces new advances in water treatment; it has two new chapters on commercial-industrial water conditioning and municipal water treatment. Its analyses of all facets of water conditioning are clear and detailed.

Economics of Urban Development

CAPITAL REQUIREMENTS FOR URBAN DEVELOPMENT AND RENEWAL—ACTION SERIES IN HOUSING AND COMMUNITY DEVELOPMENT—*By John W. Dyckman, Associate Professor of City Planning, University of Pennsylvania, and Reginald R. Isaacs, Chairman, Department of City and Regional Planning, Harvard University. McGraw-Hill Book Co., 327 West 41st St., New York 36, N. Y.* 1961. 334*pp*. $11.50.

An analysis of the economics of urban development and renewal which is designed to help answer the question, "How much urban renewal can we afford?" is offered in this book. It presents a thorough study of the national cost of renewal and development, assesses national funds available for the job and gives a new insight into the staggering task of replacing our obsolete urban capital while providing adequate capital for new growth. It also discusses the issues posed by such groups as the Rockefeller Brothers Fund Committee and the Committee for Economic Development. This book is a contribution to the understanding of the problem of urban renewal confronting this nation.

Federal Organization

UNITED STATES GOVERNMENT ORGANIZATION MANUAL—*Superintendent of Documents, Government Printing Office, Washington 25, D. C.* 1961. 821*pp*. $1.50.

The 1961-62 edition of the "United States Government Organization Manual," a perennial "best seller" among Government publications, will probably have added value to local governments, now that the federal administration has its strong urban program.

The 821-page manual—official organization handbook of the federal government—contains detailed information on the legislative, judicial and executive branches. It outlines the legislative authority, purposes and functions of each agency; includes 41 charts showing the organization of the Congress, the executive departments, and the larger independent agencies; and lists the names of more than 4,200 key officials.

Traffic Control

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS—*By David M. Baldwin. Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.* 1961. 333 *pp*. $2.

These revised standards, the first since 1948, reflect changes in driving conditions, technical advances in control devices and practices in recent years. The National Joint Committee hopes that their publication will spur uniformity and modernization throughout the country.

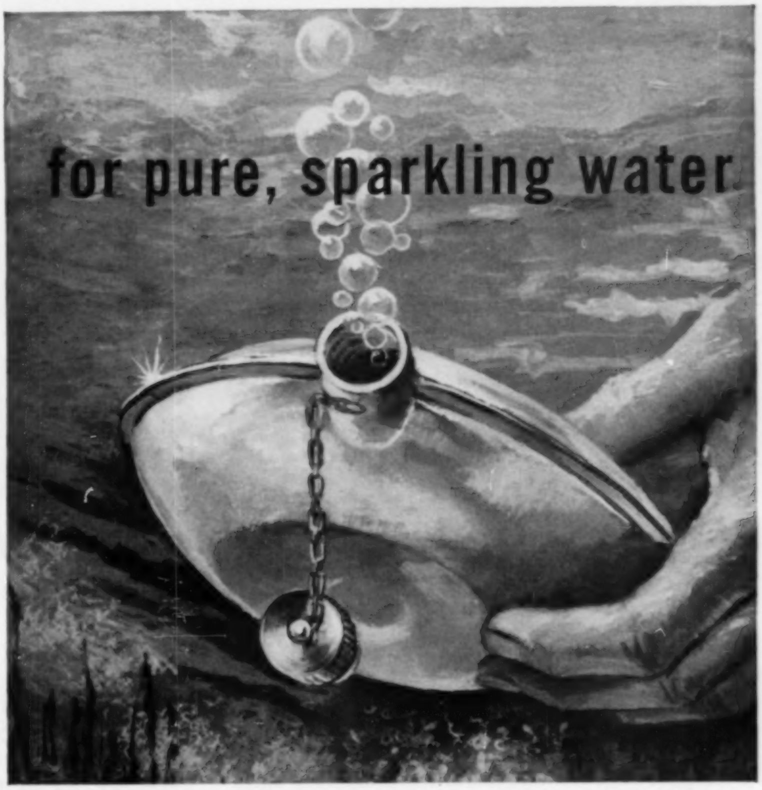
On federal-aid highway-system projects, conformance with the provisions of the new manual will be mandatory.

Official state, county and municipal groups have also endorsed the revised manual.

The manual in addition deals with such aspects as freeway signs, control devices for construction and maintenance operations, and civil-defense signs. Among other innovations are standards for control signals to facilitate reversible unbalanced lane operation at peak hours.

A basic feature of the new manual is that many of the options and alternatives in standards which were continued in the old edition have been dropped, thus eliminating many areas of confusion and uncertainty. As the result of research

(Continued on page 197)



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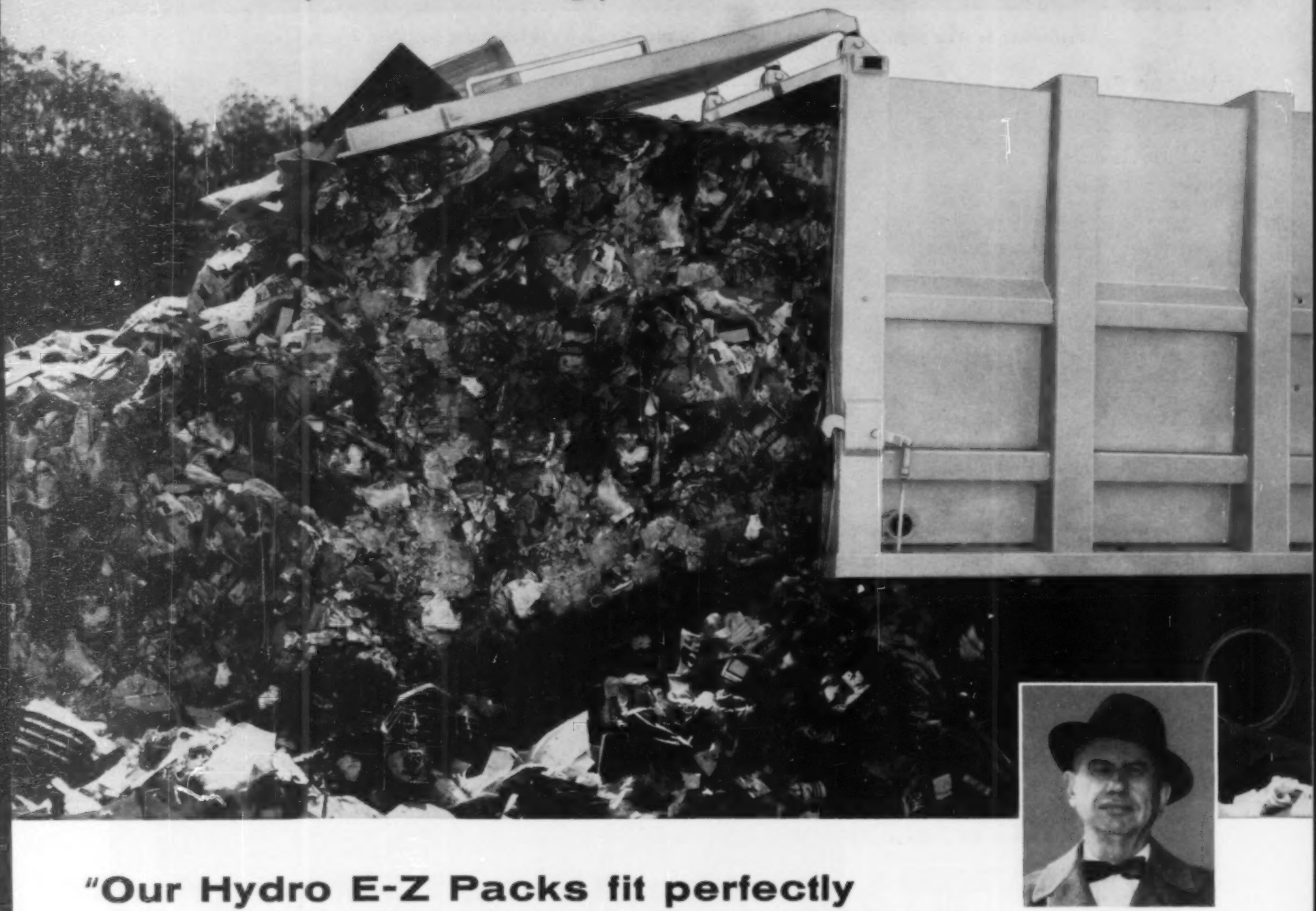
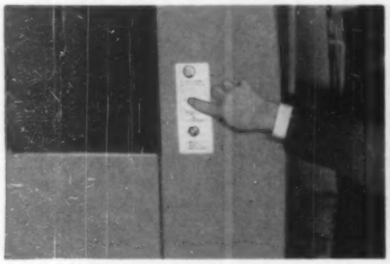
One man, in one day, makes 540 collections!



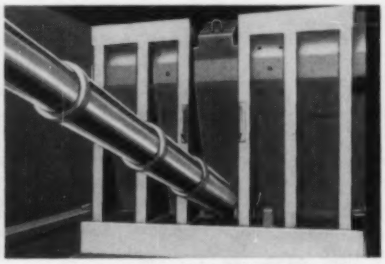
"Our Hydro E-Z Packs fit perfectly into our profit operation."—

RUSSELL SNOW,
Manager,
Refuse Service, Inc.

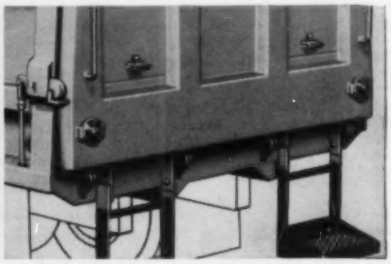
In Battle Creek, Mich., one man with a Hydro E-Z Pack makes 540 residential collections a day for Refuse Service, Inc., with only one trip to the landfill. This most powerful of all refuse compactors applies a 76,600 lb. squeeze to reduce garbage and all refuse to a compact bale. At the landfill the compactor blade pushes the load out through the endgate in less than 90 seconds. No hoisting or weighting needed! You can see why Russell Snow, Manager, says, "Our E-Z Packs fit perfectly into our profit operation." Now write us. We'll help arrange a demonstration and send you a free copy of an informative book, "The Big Squeeze."



Automatic cycling—simple push button control of packer blade makes one-man operation easier, faster than ever.



Reinforced blade moves on two enclosed tracks on sides. 84" bearing area prevents twisting, eliminates drag.



Watertight and sanitary! Six strong latches (with level release) hold one-piece door in contact with seal.

Hydro E-Z PACK

HYDRO E-Z PACK®

HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO, U.S.A.

601

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(Continued from page 195)

and practical experience, the new manual recommends a single standard as the best solution in many instances, which is a substantial step toward greater uniformity.

Generally, the text asks for larger signs than those now in common use to provide better visibility especially on multi-lane, high-speed facilities. The new manual prescribes a standard size for each type of sign, rather than establishing minimums as in the past.

Structural Analysis

FRAME ANALYSIS—*By A. S. Hall and R. W. Woodhead. John Wiley and Sons, Inc., 440 Park Ave. South, New York 16, N. Y. 247pp.* $8.50.

This book deals with the mathematical analysis of structural frames. The first section outlines basic concepts of equilibrium, compatability, and the stress-strain relationship. Following portions deal with the flexibility and stiffness analysis and indicate how they are reciprocal approaches to the same problem. Matrix algebra provides the key.

Fluorides

FLUOROSIS—*By Edward J. Largent. The Ohio State University Press, Columbus, Ohia.* 1961. 140 *pp.* $3.50.

An analytical text on the general health aspects of the fluoride compound. It contains a short chapter discussing the use of fluorides in the public water supply as a dental health measure. The author gives the usual convincing arguments favoring the measure and then marvels at those opponents of fluoridation "who . . . continue their opposition, basing it on a mass of speculation."

Most of the text is highly technical, useful principally to the expert public-health practitioners. The author lists only two authentic homicides involving fluorides and one is doubtful.

Civil Defense

INTERIM STATISTICAL REPORT. *Office of Civil and Defense Mobilization, Operational Headquarters, Battle Creek, Mich.* 1960. 133*pp.*

A report giving the present status of civil defense across the nation. It lists legislative and other progress in such items as continuity of government, warning systems, chemical, biological and radiological defense, stockpiling of materials, defense against natural disasters and many other items.

Marinas

MARINAS, RECOMMENDATIONS FOR DESIGN, CONSTRUCTION AND MAINTENANCE — *By Charles A. Chaney. National Association of Engine and Boat Manufacturers, 420 Lexington Ave., New York* 17, *N. Y.* 1961. 247 *pp.* $7.50.

Reports from municipalities indicate that more Americans would probably buy boats if they could find suitable berthing facilities.

Most communities are now convinced of the necessity for constructing more, modern marinas for the protection of small craft. This volume offers complete details of construction methods and materials that may be incorporated into the modern marina.

Jet Airports

A REPORT ON AIRPORT REQUIREMENTS AND SITES IN THE METROPOLITAN NEW JERSEY-NEW YORK REGION. *The Port of New York Authority, 111 8th Avenue, N. Y. 11, N. Y.* 1961. 170*pp.*

The Port of New York Authority investigates the possibility of another jet airport for the New York City region and finds the pickings pretty slim. One rather significant observation in the report is that such an airport should have a "noise buffer zone" of 4,000 feet.

Reform

SOS NEW YORK—*By Eric Javits. The Dial Press, Inc., 461 Park Ave. South, New York 16, N. Y.* 177 *pp.* 1961. $3.95.

An interesting text probably useful to New Yorkers rather than urban administrators at large. It shows that, once the people become indifferent and the government falls into the hands of those who put party loyalty above interest in their city, irregularities and other difficulties arise.

In other cities, conditions such as the author describes generally lay the ground work for a reform movement, often resulting in the council-manager form of government. The odds seem against such action in New York but possibly the author can lead such a movement.

FINANCE AND TAXATION

GENERAL—Local Government Finances in Relation to Population: 1957. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 1961. 259pp. $1.25.

(Continued on page 199)

Downtown Bird Problems Fly Away
. . . THANKS TO RID-A-BIRD!

Starlings Are Exterminated; Laud Merchants for Interest
By John Potisek

The battle against the starlings in downtown Terre Haute has ended. There are no new daily deposits on buildings and the walks below them, and the passers-by no longer have fears of bombardments.

Making use of a ch
called Rid-A-Bird
says it has
plan. The
on the ro
penetrates
m.

Reprinted from
TERRE HAUTE TRIBUNE,
March 1, 1961

For many years the downtown area of Terre Haute, Indiana, suffered from unsightly, unsanitary and costly conditions caused by pest birds. The Terre Haute Chamber of Commerce, Downtown Merchants Association, building owners and civic-minded citizens decided upon the Rid-A-Bird method for solving their bird problems.

The results were phenomenal! As Mr. John K. Lamb, Executive Vice President of the Terre Haute Chamber of Commerce said, ". . . the birds almost immediately disappeared from those areas which had been treated by the Rid-A-Bird method and at the end of the program there were no starlings visible in our downtown area at all."

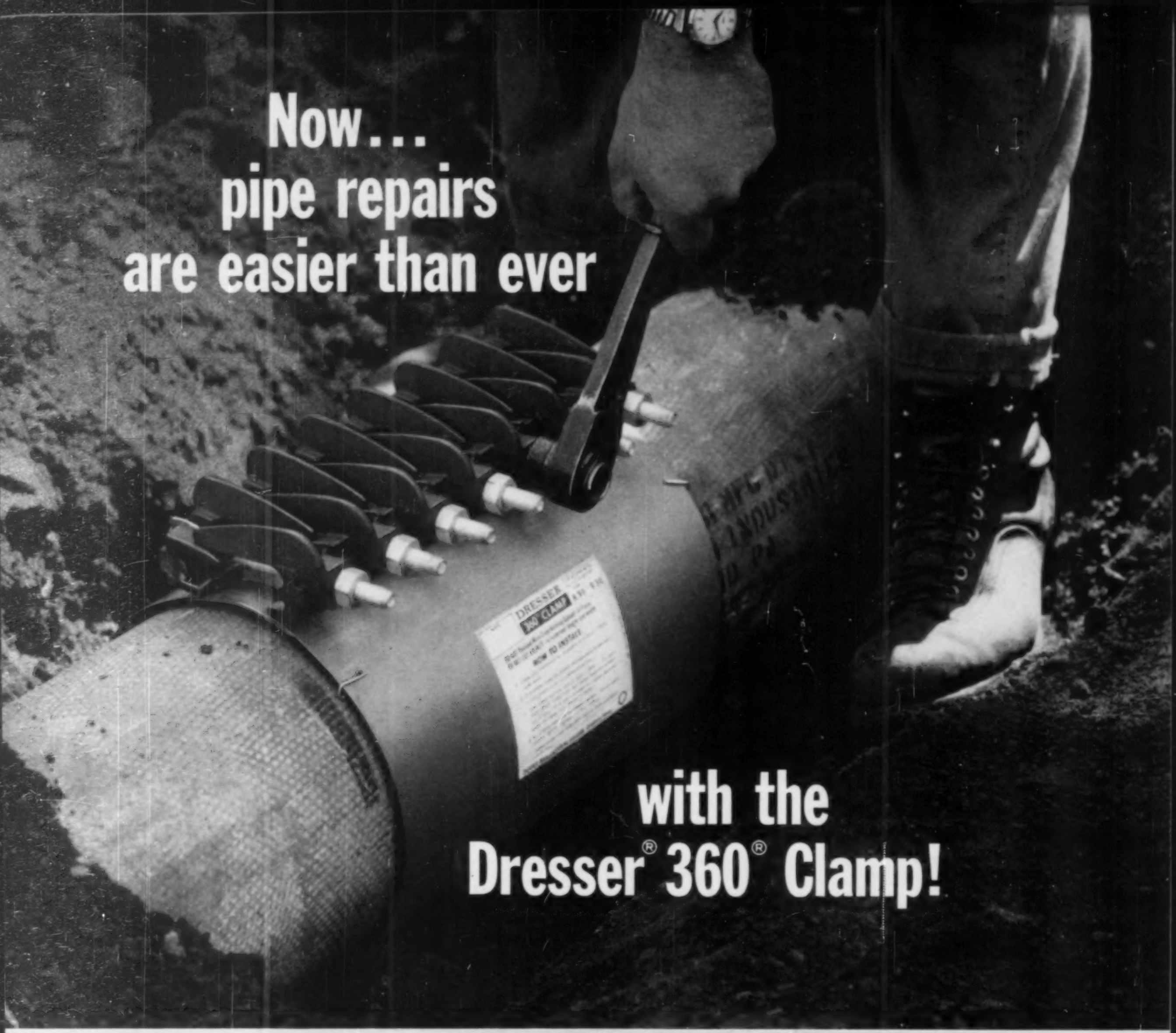
More and more cities and towns are discovering for themselves the reasons why Rid-A-Bird insures guaranteed success. No awkward, complicated or mechanical devices to install or service, which give, at best, only temporary relief. (See newspaper inset.)

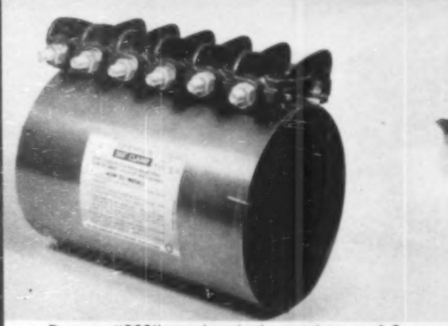
If your city has a pest bird problem in its shopping center or downtown area, it will pay you to investigate the Rid-A-Bird System now. It is *simple, safe* and *sure.*

RID-A-BIRD, INC.
P. O. Box 22, Muscatine, Iowa

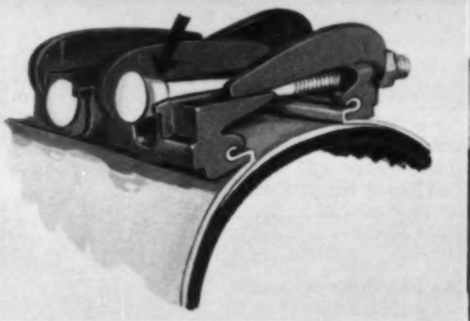
Please send complete information, AC-I

NAME ______________________
ADDRESS ______________________
CITY ______________ STATE ______________
POSITION ______________________

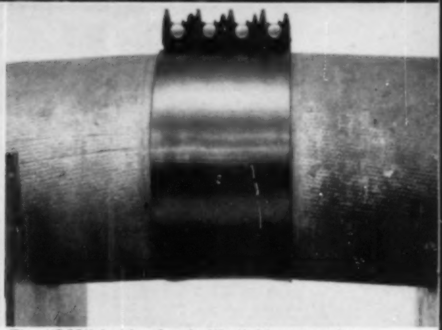




Dresser "360" repairs steel, cast iron or A-C pipe. One-side wrenching lets bolts be tightened from easiest position.



Drop-in bolts mean fast, easy assembly, no loose parts. Simply spring clamp around pipe, drop in bolt heads and tighten nuts.



The "360" holds pipe bottle-tight, even when deflected as much as 5°. Also, it is not troubled by misalignment up to ⅛".

Nothing beats the speed and ease of repairs with the Dresser "360" All-Around Repair Clamp! With its drop-in bolts, there's no nut removal, no loose parts in the ditch...one set of lugs means bolting where it's easy. The gasket—a thick, smooth, butt-joined blanket has 65% more rubber for absolute sealing. Doesn't wrinkle. The Dresser "360" provides ⅜" adjustment—fits more pipe sizes, means fewer clamps to stock. For details on the "360", or any of THE DRESSER LINE for coupling or repairing pipe — write us, or call your nearest Dresser Distributor.

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BRADFORD, PENNSYLVANIA

DRESSER
INDUSTRIES,
INC.

OIL ■ GAS
CHEMICAL
ELECTRONIC
INDUSTRIAL

(Continued from page 197)

TOLEDO, OHIO—The City of Toledo Reports to Its Stockholders—1960. Newspaper supplement of the *Toledo Blade*, Toledo, Ohio. 1961. 12pp.

NOTEWORTHY ANNUAL REPORTS

ALBUQUERQUE, N. M.—1959-60 Annual Report, plus Ten Years of Planning (report). City of Albuquerque Planning Department, City Hall, Albuquerque, N. M. 1959-60. 40pp.

CHICAGO, ILL.—Chicago Presents Its Annual Report as a paid newspaper supplement of the *Chicago Sunday Tribune*, Chicago, Ill. 1961. 39pp.

CINCINNATI, OHIO—Water Pollution Control Eleventh Annual Report. Department of Public Works, Division of Water Pollution Control, 1600 West Gest St., Cincinnati 4, Ohio. 1960. 92pp.

HONOLULU, HAWAII—28th Annual Report of the Honolulu Police Dept. Honolulu Police Department, Honolulu 13, Hawaii. 1960. 18pp.

NORFOLK, VA.—The 1960 Norfolk Story—covering a dynamic decade of planned progress. A paid report appearing in the *Virginian Pilot*, Sunday, July 23, 1961. 19pp.

RACINE, WIS. Annual Report, 1960—Sewage Disposal Plant and System, Twenty-first Street and Grand Ave., Racine, Wis. 1961. 60pp.

STRATFORD, CONN.—Stratford Town Report, 1961. Town Hall, Stratford, Conn. 1961. 79pp.

WESTMINSTER, COLO.—Third Annual Report, 1960. Paid supplement to the *Westminster Journal*, July 27, 1961. 8pp.

PLANNING, ZONING, HOUSING

GENERAL—A Guide for Organizing a Planning Commission. Colorado State Planning Division, 712 State Services Bldg., Denver 3, Colo. 1961. 9 pp. $2.

FRESNO, CALIF.—A Measurement of Progress. Department of Public Works, City Hall, 2326 Fresno St., Fresno, Calif. 1961. 42pp.

NEW JERSEY—A Guide for Zoning Boards of Adjustment. State Planning Bureau, 33 West State St., Trenton, N. J. 1961. 22pp. $2.

ONTARIO, CANADA—Some Aspects of Regional Planning. Ontario Division, Community Planning Association of Canada, 32 Isabella St., Toronto 5, Ontario, Canada. 1961. 27pp.

WATERVLIET, N. Y. — General Plan — Basic Studies. Herbert H. Smith Associates, 1241 Parkway Ave., Box 206, West Trenton, N. J. 1961. $1.

TRAFFIC

CHICAGO, ILL.—1960 Proceedings, 30th Annual Meeting Institute of Traffic Engineers. Institute of Traffic Engineers, 2029 K St., N.W., Washington, D. C. 1960. 316 pp. $3.

URBAN RENEWAL

PROVIDENCE, R. I.—Annual Report. Providence Redevelopment Agency, 410 Howard Building, Providence 3, R. I. 1961. 46pp.

WATER

METROPOLITAN WASHINGTON, D. C.—A New Source of "Priceless Water." A report on a five-year water and sewage program for the Washington, D. C. suburban area. Washington Suburban Sanitary Commission, 4017 Hamilton St., Hyattsville, Md. 1960. 40pp.

REPRESENTATIVE MUNICIPAL BOND ISSUES

from August 1st to October 1st, 1961

Date of Issue	*Locality*	*Amount in* **$1000**	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
8/ 1/61	Medway, Mass.	465	General Obligation	10-20	3.60	3.30-3.60 (on issue)
8/ 1/61	Indianapolis, Ind.	135	Flood Control	10	3.00	2.85
8/ 1/61	Mobile, Ala.	500	General Obligation	16	3.90	3.90
8/ 4/61	Gerard, Ohio	1,000	Sewer	16⅓ av.	4.25	4.48
8/ 9/61	Manchester, N.H.	1,510	Municipal Improvement and Equipment	10½	3.40	3.36
8/10/61	Holyoke, Mass.	2,065	Water	10	3.20	3.17
8/11/61	Johnstown, Pa.	1,000	Sewer and Water	3	3.25	4.43
8/22/61	Montclair, N. J.	1,556	Various Improvement	12⅓	3.50	3.45
8/22/61	Rio San Diego, Calif.	550 950 900	Waterworks	3-14 5-24 25-40	5.00 4.75 4.60	4.69
8/23/61	Fairfax, Va.	735	Sewer and Street Improvement	23-40	4.00	4.04
8/28/61	Sherbrooke, Que.	468 636	Various City Improvements	10 20	5.00 5.50	5.40
8/29/61	Macon, Ga.	200	Water, Sewer Revision	26	3.75	3.85
9/ 1/61	Allentown, Pa.	80	Various Purposes	1-4	4.25	2.25
9/ 1/61	West Springfield, Mass.	1,000	Sewer	20	3.30	3.50
9/ 1/61	Dixon, Ill.	75	Sewer	15	3.25	3.30
9/ 1/61	Islip, N. Y.	70	Municipal Improvement	19	3.60	3.75
9/ 6/61	East Haven, Conn.	2.935	Sewer	10¼	3.60	3.54
9/12/61	Springfield. Mass.	3,000	Water	13½ av.	3.20	3.17
10/ 1/61	Greenville-Spartanburg, N. C.	425	Airport	28	3.60	3.70
10/ 1/61	Tampa, Fla.	100	Gen. Obligation	18	3.50	3.60

Compiled from THE WEEKLY BOND BUYER

ALL· NEW!
FULLY
TRANSISTORIZED
Detectron
PIPE DETECTOR

In addition to the famous model "505" Detectron now offers its completely new model "808" with the first circuitry developed specifically for use with transistors. It is NOT merely an adaptation of earlier tube circuits.

Efficient under every known operating condition, effective in varying temperatures, thoroughly proven and trustworthy. Superior performance and reliability guaranteed.

EXCLUSIVE FEATURES

- ▲ Detects Deeper by all comparisons
- ▲ Automatic Switching for direct connection
- ▲ High Energy-Transfer-Ratio
- ▲ Printed Circuits, properly shielded
- ▲ Separate Oscillator System
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- ▲ Economical Standard Long-Life Batteries
- ▲ Built-In Battery Testers
- ▲ Snap-Lok Connecting Handle
- ▲ Aluminum Cases for maximum protection

Written Lifetime Guarantee
on DETECTRON parts
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WRITE FOR SPECIFICATIONS
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SAN GABRIEL, CALIFORNIA

HOW TO CUT YOUR GARBAGE PROBLEMS DOWN TO SIZE

Installation of the General Electric Disposall® Improves Public Health and Home and Community Sanitation. Its Use also Promotes Convenience and Economy.

When a General Electric Disposall is installed in the kitchen of every house in your community, there will never again be messy, smelly garbage.

The elimination of wet garbage simplifies the community's refuse handling problem. It will also reduce the number of flies and rodents attracted to the residential area. And, the General Electric Disposall won't overload sewage handling facilities.

Act for your community. Join the 60 modern communities that have eliminated garbage through such mass installations. This can be accomplished by:

1. **Adoption of a Municipal Ordinance** which requires owners of new homes—or all homes—to install disposers.

2. **City Installation**—in which the city installs the disposers just as it provides for any other method of garbage disposal. The city would maintain the units until the home owner's annual payment retired the cost of the unit. Then, ownership of the unit would revert to the home owner.

3. **Educational Program** which the city government carries out, encouraging all home owners to install disposers. The city can also aid by helping to work out a finance plan.

For more information about how the General Electric Disposall can help your community, write: General Electric Company, Dishwasher and Disposall Department, Major Appliance Division, Louisville 1, Kentucky.

G-E Disposall—the General Electric way to wash away garbage.

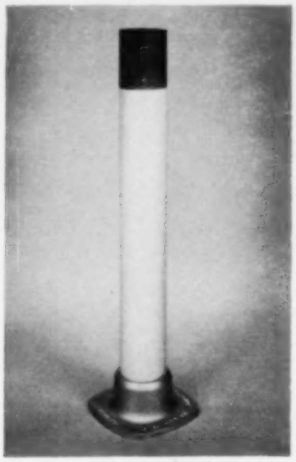
Progress Is Our Most Important Product

GENERAL ELECTRIC

Mows Large Areas

This new Ford 81-inch rotary cutter shreds 7 feet of grass and weeds at a clip, cuts heavy brush, mows road shoulders. It is available in mounted, straight-pull and offset-pull versions (shown at left).

Four free-swinging blades on two diagonally located spindles give the cutter an overlapping mowing pattern, and a built-in anti-windrow deflector spreads the cut material evenly across the swath. Cutting height can be adjusted from two to seven inches. For information on options and other features, write FORD MOTOR CO., TRACTOR AND IMPLEMENT DIVISION, BIRMINGHAM, MICH.



Guide Traffic Easily

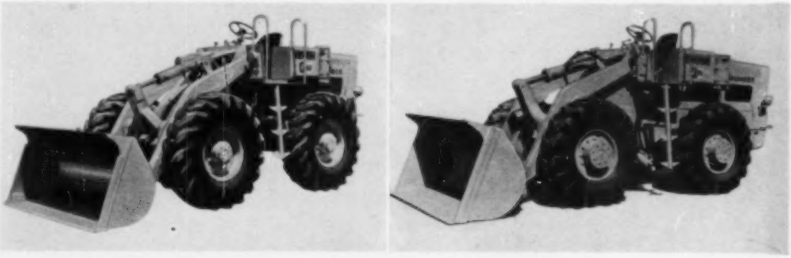
RADIATOR SPECIALTY CO., CHARLOTTE, N. C., reports that its new poly-vinyl Safe-T-Post snaps back immediately to upright position when bent, or run over, and that it outlasts rubber material 5 to 1, or more. Grey, iron base, painted with aluminum rust retardant paint, gives solid foundation to the post.

Snow Wings for Cat Wheel Loaders

OMAHA STEEL WORKS, 609 S. 48TH ST., OMAHA 6, NEBR., announces snow wings for Cat 966 and 944 wheel loaders. The wings are to be used to push high banks back to make room for the next snow fall, or to clear shoulders after a light snow fall. Control is two in-cab controls. One raises and lowers the wing in level position; the other raises or lowers the outer end. Adjustment of telescoping strut changes angle of attack. A removable cutting edge adjusts to compensate for wear.

Last year Omaha Steel introduced V-type snow plows for Caterpillar loaders. To obtain complete information on both wings and plows, write directly to the company.

Tractor Shovels



The two 4-wheel drive, rubber-tired, front-end loaders just introduced by The Frank G. Hough Co. are Model H-60, with 1¾ cubic yard bucket, and Model H-70 series "C" with 2½ cubic yard bucket.

Model H-60 offers a choice of gasoline or diesel power with engines developing 110 hp and 107 hp, respectively. Optional buckets (S. A. E. rated) have capacities from 1⅛ to 3½ cubic yards. Standard tires are 14:00 x 24—12 P. R. Power source for the H-70 Series "C" is a 148-hp diesel engine. Optional buckets for this model range in capacity from 1⅝ to 5 cubic yards. Standard tires are 16:00 x 24—P.R. *(Continued on page 203)*

NOW HE'S REALLY HAD IT!

Economical malathion-Lethane combination gives 30% better kills than presently-used insecticides ...controls resistant strains, too

60% kill of mosquitoes in area control work is no longer good enough. 90% *plus* is what you can expect with a malathion-Lethane combination. The cost? Comparable to presently-used but *far less effective insecticides.*

Controls larvae and adults

Malathion plus Lethane gives spectacular results on both life stages. While recommended rates are generally higher, 1/10 lb. per acre has given excellent control of adult mosquitoes in Florida. Hundreds of thousands of acres are being treated yearly for larvae in California at ½ lb. per acre with similar results.

Controls resistant strains

While malathion is replacing less effective insecticides in all areas, it is particularly useful in the many areas where mosquitoes have become resistant to chlorinated insecticides. Here, authorities have switched almost exclusively to malathion because it is *the* phosphate with low toxicity to warm-blooded animals. The U.S. Public Health Service reports that malathion is actually less toxic than DDT. Vector control authorities, park and city managements are specifying malathion for its combination of mosquito-killing power and safety in use. It can be applied by air, thermal fogging and mist spraying with equally good results.

Write to American Cyanamid Company, maker of technical malathion, for detailed information on area mosquito control.

Formulations widely available

Malathion formulations are supplied to area control authorities by many well-known manufacturers under their own brand names. American Cyanamid Company, Agricultural Division, Princeton, New Jersey.

CYANAMID
MALATHION
INSECTICIDES

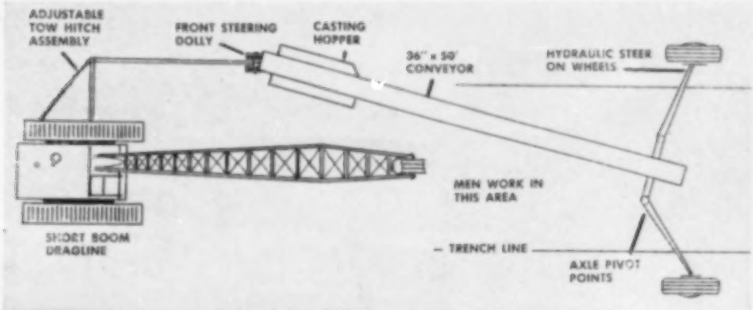
(Continued from page 203)

Extra-strong, box-section boom arms located ahead of the operator's compartment assure his safety. Simplification of maintenance is achieved by sealed pivot-point protection. Closed and pressure-controlled hydraulic systems exclude air-borne dust and moisture and new cylindrical vessel-type oil reservoir permits easy removal of the entire top for thorough maintenance and servicing of both "Payloaders."

Both models have "power-transfer" differentials on both front and rear axles to provide maximum tractive effort. When one wheel is capable of more effort than the other on the same axle, it can automatically receive up to 38% more torque.

Among options offered are Drott "4-in-1" buckets, operator's cabs, rotary and blade snow plows and bucket teeth. For details and specifications on either or both models, write THE FRANK G. HOUGH CO., 710 SEVENTH AVE., LIBERTYVILLE, ILL.

Speeds Sewer Construction Work As Much as 300%



Simultaneous excavating, backfilling and pipe-laying on sewer construction jobs is made possible by Model 161 trench backfill conveyor, introduced by KOLMAN MFG. CO., W. 12TH ST., SIOUX FALLS, S. D.

To assure continuous operation, Model 161 is shackled to the excavation machine by way of a rigid tow bar. Spoils are cast from the dragline, shovel or trencher directly into a casting hopper over the conveyor. Materials are then moved along the conveyor belt 50 feet; this distance allows pipe laying crew time to complete work while spoils are being discharged over completed pipe sections.

The conveyor belt, available in 3-foot and 3½-foot widths, and deep trough idlers, maintain high volume of material movement. The conveyor system is mounted on a 34-foot wide axle that straddles the trench; hydraulic steering permits wheels to follow excavator on curving roads. Axle folds to 7-foot width for ready transport between jobs.

This system eliminates spoil piles on lawns, boulevards or parking areas, as well as prehandling and dozer backfilling. And it makes possible the use of shorter boom lengths and larger buckets. Also increased, three to five times, is the service life of wire rope.

For complete information, write to the company.

Introduces Hydraulic Ditch Cleaner

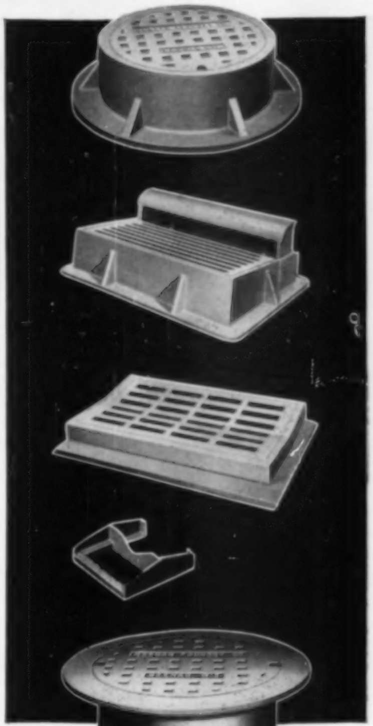
Development of a telescoping boom with Gradall actions has been announced by THE WARNER & SWASEY COMPANY of Cleveland. The unit is designated as the Gradall Hydro-Scopic and is designed specifically for cleaning and maintenance of existing ditches or preparation of new roadside drainage ditches.

(Continued on page 205)

CASTINGS?

That's all we make!

And on hand for immediate delivery are thousands of standard designs such as —



What's more, we have

15,000

patterns from which construction castings can be produced fast.

Our 168 page catalog of Gray and Ductile Iron castings will be sent promptly upon request.

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NEENAH • WISCONSIN

Chicago office: 5445 N. Neva Ave., Chicago 31

HERE'S THE BIG ONE!

ON THE JOB in the deep quarry pit of May Stone & Sand, Inc., at Fort Wayne, Ind., the 8″ Submersible pumps 1900 gpm against 113′ head.

Ready now—8″ size Gorman-Rupp New Submersible Pumps

See how the discharge is manifolded to four 4″ hoses, as this 8″ Gorman-Rupp Submersible keeps the quarry going in the dead of winter.

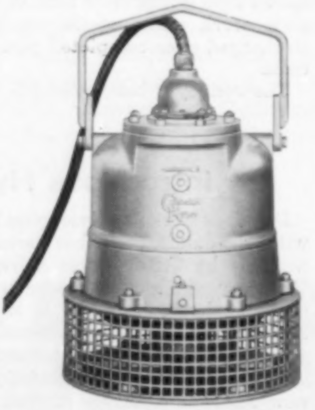
It's an all-weather, all-purpose pump if there ever was one. It's automatic. It's electric. It can handle silty water and solids up to 1″ diameter. Has special erosion-resistant materials at wearing points. Requires no attendance; can pump the supply down and run that way for long periods without damage. Leave it submerged indefinitely when continuous service is required—all internal hardware parts in contact with the water are stainless steel. And—the 8″ size pumps 1000 gpm at 148′ head, 1800 gpm at 118′ head, and 2700 gpm at 40′ head.

When it's a submersible pump job, here's a unit that pumps *more*—and so dependably! Less first cost. Less maintenance and repair costs. *Gorman-Rupp Submersibles are proving that on jobs from coast to coast.*

The family includes 3″, 4″, 6″ and 8″ pumps in motor power specifications to suit *your* requirements. How about calling in your Gorman-Rupp Distributor? Or—call us direct for any information you need.

The Gorman-Rupp Company
305 BOWMAN STREET MANSFIELD, OHIO
GORMAN-RUPP OF CANADA LTD., ST. THOMAS, ONT.

Available with 65 hp oil-filled motor, 1750 rpm, 3 phase, 60 cycle, 220 or 440 volt current. Weight of pump only, 775 lbs.



11-3210

(Continued from page 203)

The boom is interchangeable with Hopto 200 hydraulic backhoes and incorporates all Gradall boom actions—in and out telescoping, up or down, 90° tilt, 190° swing, controlled down pressure, and reach of 14 feet 8 inches at ground line.

An interchange of booms involves only withdrawal of two pins and quick disconnect of six hoses to remove the boom.

The Gradall Hydro-Scopic was built at Warner & Swasey's BADGER DIVISION, WINONA, MINN.

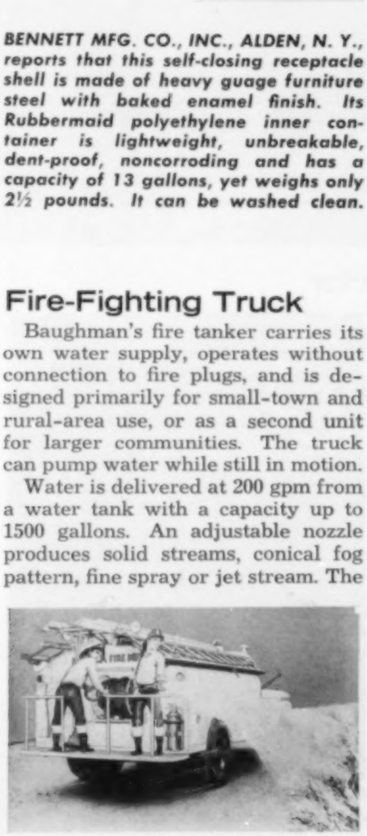
Sturdy Waste Receptacle

BENNETT MFG. CO., INC., ALDEN, N. Y., reports that this self-closing receptacle shell is made of heavy guage furniture steel with baked enamel finish. Its Rubbermaid polyethylene inner container is lightweight, unbreakable, dent-proof, noncorroding and has a capacity of 13 gallons, yet weighs only 2½ pounds. It can be washed clean.

Fire-Fighting Truck

Baughman's fire tanker carries its own water supply, operates without connection to fire plugs, and is designed primarily for small-town and rural-area use, or as a second unit for larger communities. The truck can pump water while still in motion.

Water is delivered at 200 gpm from a water tank with a capacity up to 1500 gallons. An adjustable nozzle produces solid streams, conical fog pattern, fine spray or jet stream. The hose reel retracts automatically at the push of a button.



Other standard equipment includes rotating beacon, siren, self-priming pump, suction hose and strainer, fire extinguishers, one one-inch and two 1½-inch hose lines. A jack system for the rear wheels relieves the weight of a full water tank while the truck is parked.

For additional information, write to BAUGHMAN MFG. CO., JERSEYVILLE, ILL. Request *Bulletin* A-462.

Highway Maintenance Mower

A sickle bar mower that cuts a 25-foot swath has been added to the equipment line manufactured by the O. W. Kromer Co. Its sickles raise hydraulically and each is operated by an electric motor and can be operated separately. Safety releases automatically protect the outboard sickles.

The Wydemower has a low center

(Continued on page 206)

Glass Enclosures

FOR

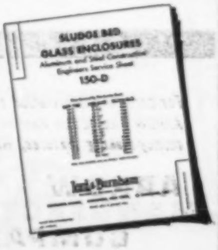
SEWAGE TREATMENT PLANTS

ALUMINUM CONSTRUCTION

Now available in lifetime aluminum construction with galvanized steel framework. For sludge beds, sprinkling filters, tanks or wherever a glass enclosure is needed.

WRITE FOR NEW ENGINEERS' SERVICE SHEETS

Write today for your new set of Engineers' Service Sheets AC-1061 containing details, specifications and recommendations for every job request.



Lord & Burnham
DIVISION OF BURNHAM CORPORATION
Irvington, N. Y. St. Catharines, Ont.

NEW
ADVANCED DESIGN
ARROW
Side-Action Mobile Hydraulic Hammer

With the new ARROW you get these important advanced design features for faster, lower-cost tamping, breaking and cutting:

- Two new side-action models—G400 and D500
- Choice of gasoline or diesel engine
- Dash-mounted creeper drive controls
- Increased creeper power—infinitely variable speed control
- Totally enclosed creeper drive
- New, more powerful brakes
- New, heavier drive axle
- New, heavier steering axle and wider tire tread
- New, built-in oil cooler
- 12 volt electrical system
- New safety devices give added protection to operator and machine
- New, improved, adjustable seat
- Superior maneuverability—shorter turning radius
- New throttle controls

For complete information about the new ARROW Side-Action Hammer and its money-making features, WRITE TODAY!

ARROW
MANUFACTURING
COMPANY
194 W. Dakota Avenue,
Denver 9, Colorado

Purchasing News

(Continued from page 205)

of gravity for better stability and individual brake pedals for greater traction. Controls are handy for accurate, easy operation. The engine is located behind the driver to provide him with unobstructed view of the three sickles in front of him.

In addition to the sickle bars, the Wydemower is available with rotary cutters that will cut up to a 14-foot swath, and hammer and flail-type mowers. It can be equipped with quick detachable mowers and used, with attachments, as a street sweeper, dozer blade, or bucket or snow plow.

For detailed information, write to O. W. Kromer Co., 1120 Emerson Avenue N., Minneapolis 11, Minn.

Midget Electronic Leak Detector

Aluminum-housed, 20-ounce Model ML-61 detects all types of water leaks under dirt, pavement, concrete, wood and other surfaces with rapid, pin-point accuracy.

Its one-inch square Rochelle Salts crystal microphone accepts important leak vibrations, minimizes extraneous, unwanted sounds. And an electronic filter circuit further assists the operator in detecting only important leak noise.

Operation is by finger-tip control, with the on-off switch and gain control combined under one knob and the head phones permanently wired in. Accessories are available. Total weight with accessories is 1¾ pounds.

For complete information, write to the Goldak Company, Inc., 1544 W. Glenoaks Blvd., Glendale 1, Calif.

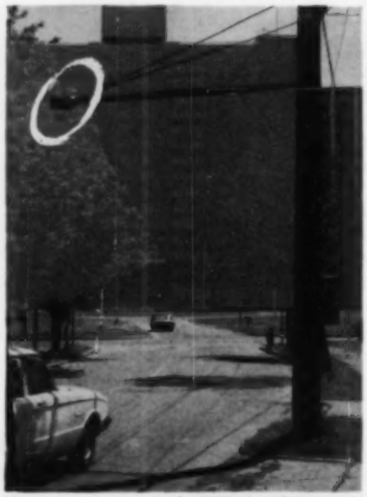
Ultra-Sonic Vehicle Detector

The Vehicle Traffic Control Division of The General Railway Signal Company, Rochester, N. Y., has developed a new Ultra-Sonic CHEKAR Type SVDM direction/motion vehicle detector, which distinguishes between approaching and receding vehicles, long a major problem in the automatic actuation of vehicle traffic signals and signs.

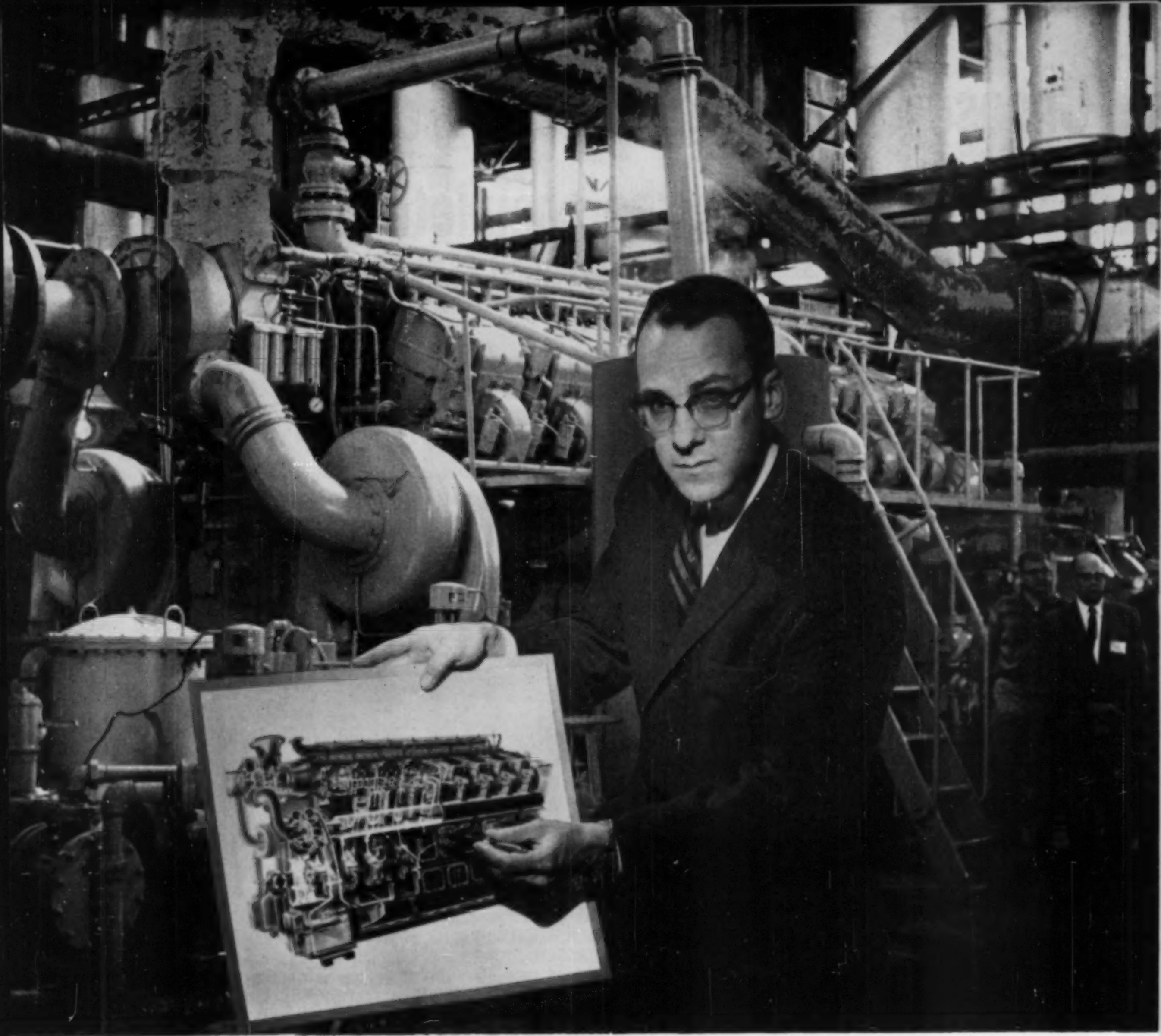
It detects only moving vehicles from maximum road speeds to as low as four miles per hour yet provides maximum immunity to receding vehicles which may enter the SVDM's detection zone. This gives high protection against "false" signals or sign "calls" by departing vehicles.

A choice of mounting methods is available—over the road, or at the side—depending on particular job requirements. Detection is effective

(Continued on page 209)



Mast-arm mounted SVDM ultra-sonic vehicle detector at work.



Announcing new diesel engine with less weight per horsepower

High horsepower-to-weight ratio provided by the new KSV engine makes it attractive for marine service. Shown above on test, this new Cooper-Bessemer 4-cycle diesel engine has proved extremely rugged in continuous operation. It has completed two years of development testing and is now available in 12 and 16 cylinder designs, for 2960-4280 bhp, 450-514 rpm service.

The high horsepower-to-weight advantage of the KSV results from unique design features including large bore-stroke ratio and short pistons, with relatively high rpm.

Call the nearest office for further information or write The Cooper-Bessemer Corporation, Mt. Vernon, Ohio.

Cooper-Bessemer

GENERAL OFFICES: MOUNT VERNON, OHIO

COMPRESSORS: RECIPROCATING AND CENTRIFUGAL
ENGINES: GAS - DIESEL - DUAL FUEL
JET-POWERED GAS TURBINES

Choose the sewage treating equipment you need from the complete INFILCO line

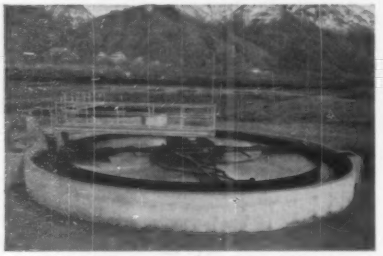
EMINENCE IN EQUIPMENT DESIGN · INFILCO · GIVES YOU PLUS VALUES ·

AERO-ACCELATOR® activated sludge plants combine biological oxidation and clarification in a single compact unit. They provide efficient operation at high loadings, stability under shock conditions and low installed cost. Can be designed for complete treatment.

Bulletin 6510.

BIOSORPTION® activated sludge system saves space and reduces cost by treating sewage in about 5 hours with consistent removal of 90-95% BOD and suspended solids. Can be adapted to existing plants, thereby increasing capacity at low cost.

Bulletin 6550.



SEDIFLOTOR® clarifiers provide both sedimentation and flotation in one compact unit. Where space is limited and high-rate production a must, this unit is ideal for removing both floatable materials and settleable solids.

Bulletin 6051.

ACCELO-BIOX® activated sludge plants operate on the "total oxidation" principle. One type of "ACCELO-BIOX" plant uses atmospheric oxygen to sustain organisms which purify the sewage. This plant is recommended for small communities, sub-divisions, motels and similar projects.

Bulletin 6520

MONODECK® floating cover incorporates improved simple plate and pontoon design. Banishes operating and maintenance problems of truss type covers. Statically determinate structure in which weighted pontoon is designed for torsion, bending, compression. Tipping and side-thrust on tank wall eliminated.

Bulletin 6723

The **VORTAIR®** aerator is an improved turbine type surface aerator offered for the atmospheric oxygenation of liquids in lagoons, ponds and basins. It may be mounted on columns, or on a float when the liquid level varies. This aerator has an oxygen transfer efficiency in excess of 4 lbs./HP/Hr.

Bulletin 6620

Visit us in Booth 77 and 78,
Water Pollution Control Federation,
Milwaukee

These are only a few of the products for sewage and waste treatment in the complete INFILCO line.

Write for our condensed catalog and other bulletins.

INFILCO
GENERAL
AMERICAN

Subsidiary of
General American
Transportation
Corporation

INFILCO INC. General Offices Tucson, Arizona

Field offices throughout the United States and in other countries

524

(Continued from page 206)

up to two standard road lane widths. Installation is simple and low-cost.

In the accompanying illustration (page 206), mast-arm mounting provides detection for one or two adjacent traffic lanes. Vehicles stopped or parked in one lane do not interfere with detection of moving vehicles in another lane.

For complete information on this new ultra-sonic vehicle detector, which provides dependable detection of moving vehicles, write directly to the company.

Beach Cleaner

A self-propelled beach cleaner introduced by Lockwood Grader Corp. clears cigarette butts, seaweed, tin cans, broken glass and other debris from sand to a depth of six inches.

Powered by a Ford industrial engine, it features four wheel drive, hydraulic dump bucket, power steering, and a full 66-inch bed to provide a clean, wide sweep. For additional information and illustrated literature, write to the Advertising Department, Lockwood Grader Corporation, Gering, Nebr.

Flashes Hazard Warnings

This is the No. 675 Visi-Flash, which delivers a 71 candlepower warning flash 65 times per minute for 4500 hours. It is powered by 6-volt lantern-sized batteries and is available with ten different circuits, including a high-brightness neon tube circuit.

For added safety, the 7-inch optical acrylic lenses include a reflex reflectorized lens band which provides ten square inches of bright, reflective lens area. Die-cast, visored head allows each lens to float freely in separate lens tracks to prevent impact damage. Head assembly can be swiveled 180° for positive aiming of the warning flash.

An optionally available photo cell control will increase battery life by 50%, reports the manufacturer. For additional information, write Joseph H. Emery, Jr., R. E. Dietz Co., 225 Wilkinson St., Syracuse 1, N. Y.

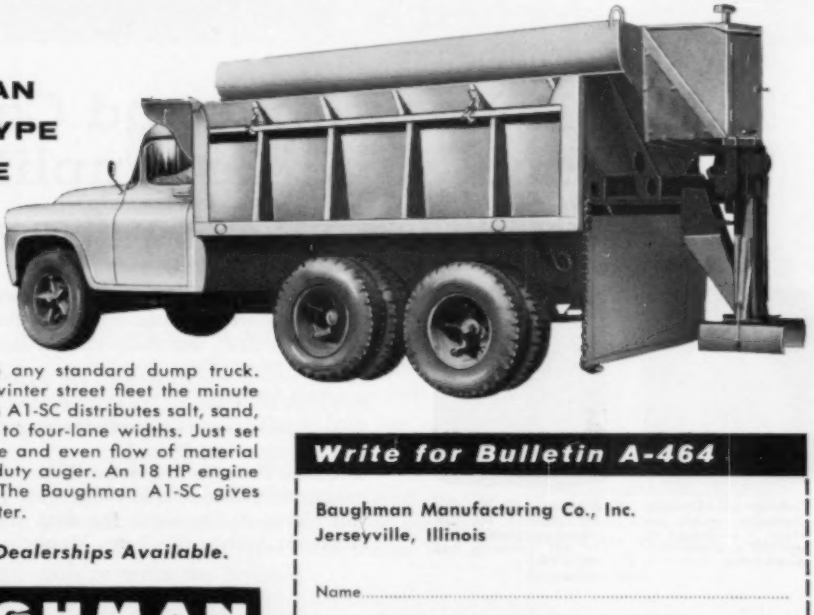
Split-Channel Monitor Receivers

These receivers provide clear, strong reception of 2-way radio communications on any specified channel within the frequency range of the receiver, even under the most congested signal conditions, reports Outercom Electronics Corp., 502 Charlottetown Mall, Charlotte, N. C.

The new MR 30-X and MR 50-X make possible complete liaison for emergency services members, busi-

(Continued on page 211)

Converts Truck for Ice-Control Work in 15 minutes



NEW! BAUGHMAN AUGER TYPE A1-SC MOUNTABLE SPREADER

Special body that fits readily into any standard dump truck. Turn your trucks into an effective winter street fleet the minute bad weather strikes. The Baughman A1-SC distributes salt, sand, cinders . . . spreads from one-lane to four-lane widths. Just set the control in the truck cab. Positive and even flow of material from body to distributor by heavy duty auger. An 18 HP engine drives the auger and distributor. The Baughman A1-SC gives you a standby fleet, ready for winter.

A Few Choice Dealerships Available.

BAUGHMAN
TRANSPORTS-SPREADERS-CONVEYORS

BAUGHMAN MANUFACTURING CO., INC.
307 SHIPMAN ROAD, JERSEYVILLE, ILLINOIS

6135

Write for Bulletin A-464

Baughman Manufacturing Co., Inc.
Jerseyville, Illinois

Name..
Address..
City..State..................

NEW
FROM
FOXBORO!
FOXBORO
pH
10
8
6
4
3

Foxboro pH Dynalog Recorder has an input impedance of 80,000 megohms — eliminates the need for intermediate amplification. Span is adjustable from 2-10 pH; zero, from 0-12 pH.

pH Recording and Control without need for amplification

less drift, less cost, less maintenance, too!

Foxboro pH Dynalog Controller — for use where it is desired to hold pH at a predetermined value.

Foxboro pH Dynalog Indicator — for use where complete record of pH value is not required.

THAT'S RIGHT — the intermediate amplifier is gone from Foxboro's new low-cost system for measuring pH. And gone with it is the wasted panel space, the drift, the daily standardization inherent with earlier systems.

In the new Foxboro system, the signal from the pH electrode goes direct to a high impedance Dynalog* receiver — without intermediate amplification. Signal operates a direct-reading indicator or recorder—or a controller and alarms, when desired.

The new Foxboro pH system is the simplest, most economical method of measuring pH available today. Ask your Foxboro Field Engineer to tell you about it. Or write for data sheet. The Foxboro Company, 9510 Neponset Avenue, Foxboro, Massachusetts.

*Reg. U.S. Pat. Off.

FOXBORO Analytical Instrumentation

REG. U. S. PAT. OFF.

(Continued from page 209)

ness associates, or control centers of all messages being transmitted, either from vehicle-to-vehicle, fixed station-to-vehicle, or vehicle-to-fixed station.

These crystal-controlled units are factory-tuned to the specified channels and will not drift, or "untune" from that channel. They're designed for continuous duty, permitting 24-hour monitoring service.

The standard Outercom Monitor Receiver is single channel. An optional feature is a 4-way switch that permits selection of 2, 3, or 4 preselected 2-way radio channels, with a spread of 1% of channel frequency. MR 30-X is for 25 to 54 MCS; MR 50-X, for 147 to 174 MCS. Complete information is available from Outercom Electronics Corp.

Relamp, Service At Ground Level

Economical ground-level maintenance on street lights, area lights and flood lights is made possible by a new luminaire lowering mechanism introduced by Pfaff & Kendall, 84 Foundry St., Newark 5, N. J.

The new UL-approved device is available on a wide range of P & K aluminum lighting standards, single and twin arm models with truss arms up to 15 feet long. It can be used to support pendant-type incandescent or mercury vapor luminaires and bail or yoke suspended single or twin flood lights. P & K reports the unit ideally suited for locations inaccessible to the usual maintenance equipment or where such equipment is not on hand.

For detailed information on the lowering mechanism and companion standards, write for *Technical Catalog* LM-1.

lower your costs on small sized trenching assignments

DIG IN FAST WITH A 77 TRENCHLINER®

Small main and service line work steps ahead quickly when you dig in with the Parsons® 77. It's not much wider than a yardstick, yet can cut 6" to 18" trench down to 5-ft. depths at speeds up to 21 lineal feet per minute.

The 77 has 32 hi-lo digging selections — a speed for most profitable penetration in any ground. It's easy to use, move, and maintain. See your nearby Parsons distributor for details or write for bulletin.

Close quarter work no problem here! 77 can move within a track's width of side obstructions — speed your trenching in closest quarters. Removable seat.

P116

PARSONS COMPANY
NEWTON, IOWA

A Division of KOEHRING Company

. . . for winter ice control

SWENSON SPREADERS

. . . for summer resurfacing

New . . . REPLACEABLE TAIL GATE MODEL

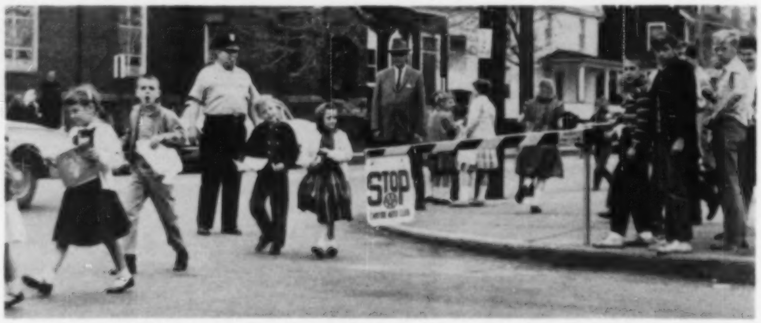
New . . . V-BOX STYLE SPREADER

Industry Standard . . . FORCED FEED, ROLL TYPE

Here's year-round spreading dependability for any combination of sand, gravel, salt, chemical or cinders. Swenson's new Replaceable Tail-Gate and V-Box models give the driver precise, hydraulic cab control for direction, width and flow of material — spread wide or narrow — heavy or light — left, center or right with swaths from 2′ to 45′. Reliable Forced Feed, Roll Type Spreader is the standard of the industry — spreads material evenly at all speeds. Write today for information about Swenson's complete spreader line.

SWENSON SPREADER
LINDENWOOD, ILLINOIS

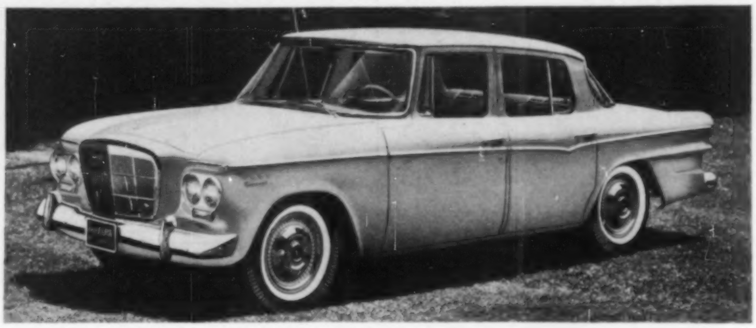
Purchasing News



Protects Pedestrians

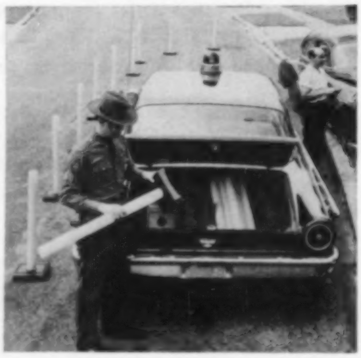
Traffi-Trol Safety Gate Co., 537 Sixth Ave., Steubenville, Ohio, has introduced a pedestrian gate that covers a full lane of traffic, resembles a railroad crossing gate, and weighs 8 pounds. Advantages of the school-monitor operated gate include: child gate operator never leaves sidewalk; positive curbing of pedestrian traffic; a safety path to protect children as they cross the street; a stop sign for motorists; eliminating necessity of removing signs after school hours. For additional information on this pedestrian safety gate, write to the company.

Studebaker Lark for 1962



In addition to the well-known features of economy, safety, ease in servicing and reliability, Studebaker Larks for 1962 include engineering refinements that contribute to smoother operation, more sensitive response and increased riding ease. Overall body lengths have been increased on all models. The exceptionally wide choice of engine, transmission and rear axle ratio combinations enable the Lark to be customized to all operating and geographical requirements. For details, write Studebaker-Packard Corp., South Bend, Ind.

Traffic Safety Lane Markers



Stokes Molded Products has introduced a highly visible traffic marker with interchangeable yellow tubes set in a separate, heavy 10-inch square molded base. The tubes are made in heights from 1 foot to 6 feet in increments of 1 foot and have excellent visibility. Colors are molded in for permanency and the units have good impact resistance.

These traffic delineators occupy little space, less than conventional cones, and can be carried easily in car trunks by highway crews and by

(Continued on page 215)

You can Rely on Armco Water Pipe

for efficiency . . . durability

For strength,
economy,
durability

Armco Steel Water Pipe is designed to give you reliable, efficient carrying capacity and to resist any unusual or unexpected condition. You needn't worry about washouts, soil settlements or traffic vibrations with Armco Pipe. To make certain it will withstand these conditions, each length must pass rigid strength tests before it leaves the mill. With durable Armco Pipe, reliability lasts through the years.

Find out how Armco Steel Water Pipe can fit *your* requirements. Mail the coupon to **Armco Drainage & Metal Products, Inc., subsidiary of Armco Steel Corporation, 7081 Curtis Street, Middletown, Ohio.**

HAVE AN ARMCO SALES ENGINEER CALL ME FOR AN APPOINTMENT.

NAME____________________

ADDRESS____________________

CITY____________ZONE______STATE________

PHONE____________________

ARMCO Drainage & Metal Products

GIVE 'EM LINDSAY COMPACT AIR

The test of 40 years progress in building direct drive Radial Type air-cooled, engine driven air compressors assures you of durability. Lindsay Air Compressors are built for day-in, day-out operation—year after year. That's why many public utilities, municipalities and contractors throughout the country have fleets of Lindsay radial type air compressors.

***LINDSAY COMPRESSORS** are . . .*

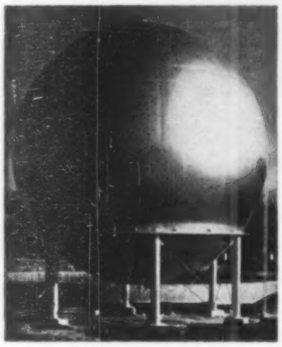
- **Truly Portable**
- **Light in Weight**
- **Low in Original Cost**
- **Built for Continuous Operation, every day**

LINDSAY BUILDS RADIAL TYPE AIR COMPRESSORS from 55 c.f.m to 125 c.f.m

Smaller Models from 5 to 30 c.f.m.

Steve Marone wants steady, economical performance from his equipment. He gets it every time from this rugged, portable Lindsay Compressor.

P. K. LINDSAY CO., INC.
Deerfield, New Hampshire
Everett 49, Mass.



GAS HOLDERS

for recovery of sewage gasses

Many municipalities are salvaging sewer gas for fuel, through the use of COLE gas holders similar to the one pictured. Send us your inquiries for tanks of this type—as well as for elevated water storage tanks . . . Take advantage of our 106 years of specialized knowledge and experience in serving America's municipalities and industries and discuss your problems with us. Visitors are always welcome at our plant. Stop by and see us.

Elevated Tanks, Pressure Vessels, Chemical and Processing Equipment from Aluminum, Stainless and Carbon Steel, Monel and Other Alloys.

Established 1854

R. D. COLE MANUFACTURING CO.
COLE
NEWNAN, GEORGIA

STREET SIGNS

LONG LASTING

MAINTENANCE FREE

LOW COST

150 Ft. VISIBILITY

THIS NEW DESIGN Cast Aluminum 2 and 4 way street sign has been created by us in answer to the many demands by municipalities for a less expensive, maintenance free, long lasting street sign.
It can save you money on purchase price, erection cost and future replacement.
Signs are sand cast of corrosion resistant prime aluminum, especially treated with new scientific coatings that make them permanently attractive, and impervious to weather, airborne acids, alkalis and other contaminative materials. Comes in choice of satin or Prismo reflectorized letters against colored background. High visibility day or night.

LAKE SHORE MARKERS

Write on letterhead for brochure "AC"—it's free.

"Custom Cast LAKE SHORE MARKERS INC *Aluminum Specialists"*

654 West 19 St., Box 59, Erie, Pa.
Municipal Markers • Plaques • Cemetery Markers
Building Letters • Golf Course and Playground Markers

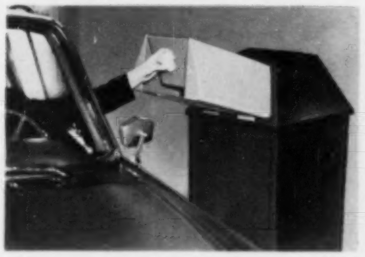
Purchasing

(Continued from page 212)

police for emergency use at the scene of accidents. The company reports that when used for lining highways, road construction and repair, twice the number can be used at less cost than for the usual markers. They will accommodate presently-used standard accessory flags, warning signs or flashing lights.

For additional information on these traffic lane safety markers, write to STOKES MOLDED PRODUCTS, TRENTON, N. J.

Drive-Up Waste Receptacles



The Snoot converts United Metal's No. 150 Swing Top and its 55-gallon Drum Tops, No. 130 and 140, waste receptacles from the "drop-in" type to the "drive-up" type. The unit makes possible fast, convenient litter disposal on highways, streets, shopping centers, etc. Its 17½-inch length enables motorists to dispose of refuse within an arm's reach without leaving their automobiles. For complete information, write to UNITED METAL RECEPTACLE CORP., 27-29 OCEAN AVE., JERSEY CITY 5, N. J.

Chases Sharks

A repellent designed to ward off sharks, and heretofore available only to the U. S. Government, is now being produced for civilian use. It is called Presto Shark Chaser and may be used by municipal and state agencies, life guards, harbor patrols, and others assigned to patrol beach and other oceanfront areas.

As a liquid, the Shark Chaser may be carried in lifeboats, patrol boats and other craft; in cake form, it is carried in waterproof packets designed for attaching to life jackets, life rings, inflatable rafts and rescue dinghies.

Presto Shark Chaser works much like an oversized teabag. When the waterproof packet is torn open, a

(Continued on page 217)

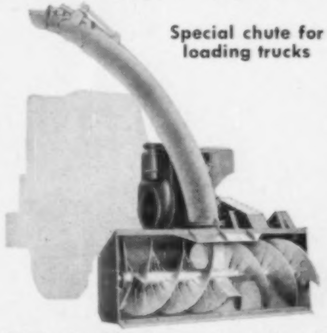
Only a Bros *Sno-Flyr* can do these jobs...this well

Just mount a BROS Rotary *Sno-Flyr* on your present equipment and you're ready for the heaviest snowfall . . . *for no snow is too heavy for a* BROS.

Here, for example, are just four of the jobs which only a rotary can perform . . . four reasons it will pay you to own *Sno-Flyrs* this winter:

- **For fastest loading of windrowed snow into trucks.**
- **For knocking down high drifts which you couldn't handle with any other type of equipment.**
- **For casting snow from bridges.**
- **For efficient removal of extra-deep snow . . . or any removal without leaving ridges or banks.**

Some of the most popular *Sno-Flyr* Models are described below. Which will fit your present equipment?



"A" Series *Sno-Flyrs* give you plenty of capacity for many snow removal jobs. The big 20-ton-per-minute Model BL is recommended for airports and other heavy duty jobs.

A Bros *Sno-Flyr* To Fit Your Need

MODEL	HP*	Mounts on:	Cutting Height	Cutting Width	Casting Distance**	Rotation of Casting Chute	Tons of snow per minute**
A-66J	36	Jeep	30″	6′6″	up to 40′	180°	up to 7
A-66CW	36	Jeep or other 4-wheel drive vehicle	30″	6′6″	up to 40′	220°	up to 7
A-66L	36 or 61	Front end shovel or loader	30″	6′6″	up to 40′	180°	up to 7
A-76CW	61 or 107	2-ton and larger trucks with universal type hitch	30″	7′6″	up to 40′	320°	up to 15
BL	168	Front end shovel or loader	40″	8′	up to 75′	320°	up to 20

* Hp ratings are dynamic bhp **Depending on horsepower

For full information, write

BROS

Road Machinery (*Sno-Flyr*) Division

BROS *Incorporated*

Minneapolis 14, Minnesota • Phone: FEderal 1-5921

Double the clear water capacity at half the installed cost with Celite Filtration

Because diatomite filtration systems using Celite® filter aids require one-fourth the housing space of equivalent-capacity sand systems, real estate and construction costs are drastically reduced. These savings, combined with the low initial price of a diatomite unit, permit the construction of new water filtering plants at one-half the cost.

Celite is the most efficient and economical filter aid available. It removes all suspended solids—including amoebae, floc and algae—while maintaining maximum flow rates. And, this clearer, brighter water is produced at a lower cost because a compact, semi-automatic diatomite system is easily operated and maintained by regular municipal water personnel.

For full information write: Johns-Manville, Box 325, New York 16, N. Y. In Canada: Port Credit, Ontario. Cable address: Johnmanvil.

JOHNS-MANVILLE JM

(Continued from page 215)

blue-black chemical cloud filters through a gauze covering, spreading a protective chemical mantle around the swimmer. A single packet is effective for approximately 3½ hours.

PRESTO DYECHEM CO., INC., 45 JOHN ST., YONKERS, N. Y. reports that the Shark Chaser is carried as standard equipment on every life jacket used by the U. S. armed services and in the U. S. space program.

Announces Fully Hydraulic Winch

It's a PIPPIN

Windsor Pippin's new winch has full hydraulic power and is capable of line pull of more than 17,000 pounds. It is designated as the Model 10 and comes with either larger cylinders for more power or smaller cylinders for more speed.

The new fabricated steel winch fits all tractors and can be used wherever hydraulic power is available—no power take-off is required.

According to the manufacturer, the winch has neither flexible packings, clutch bands, brake bands nor gears and operates without slipping or jerking. Two hydraulic cylinders power the cable drum; each has cast iron pistons and rings.

For detailed information, write to WINDSOR PIPIPN CORP., WINDSOR, VT.

New Safety Fabrics

This line of water-proof, fluorescent-color vinyl-coated nylon fabrics has been introduced by the Vulcan Division of Reeves Brothers, Inc. It is to be used for safety flags and for conspicuous safety clothing of traffic policemen and traffic directors at airports and construction sites.

The fabric is available in red, yellow, orange, and other colors. It comes in widths of 39 inches and 56 inches, in weight of 10 ounces per square yard.

For additional information, write to REEVES BROTHERS, INC., 1071 AVENUE OF THE AMERICAS, NEW YORK 18, N. Y.

Infra-Red Highway Patcher

Model HE-PR-32 is new to the Aeroil line. It features 26,000 BTU infra-red generators and has an overall dimension of 24 inches by 32 inches. It is to be used for patching holes in black-top as well as for removing rough spots caused by traf-

(Continued on page 219)

HERE is the answer to

EMERGENCY BARRICADES

Lightweight, Easily-Adaptable

SAFE-T-CONE

TRAFFIC GUIDES

SAFE-T-CONES are proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities ...for traffic channeling, utility repairs, line painting and emergency blockades.

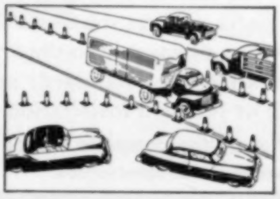
SAFE-T-CONES are easily adaptable to all situations at a moment's notice. Special construction allows them to be "stacked" in small space.

28-Inch

18-Inch

12-Inch

AVAILABLE IN 3 SIZES



Solid-Color PVC* POLY-CONES—18-inch and 28-inch sizes. Outlasts ordinary cones without upkeep!

*Poly-Vinyl Chloride

For full information write

RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

TARCO'S Scotchman
SAVES AS IT SALTS
UNION COUNTY HIGHWAY
TARCO
Watchman

TARCO *Dump Body* HOPPERS for Straight De-icing Salts

Gravity feed . . . **no moving parts.**

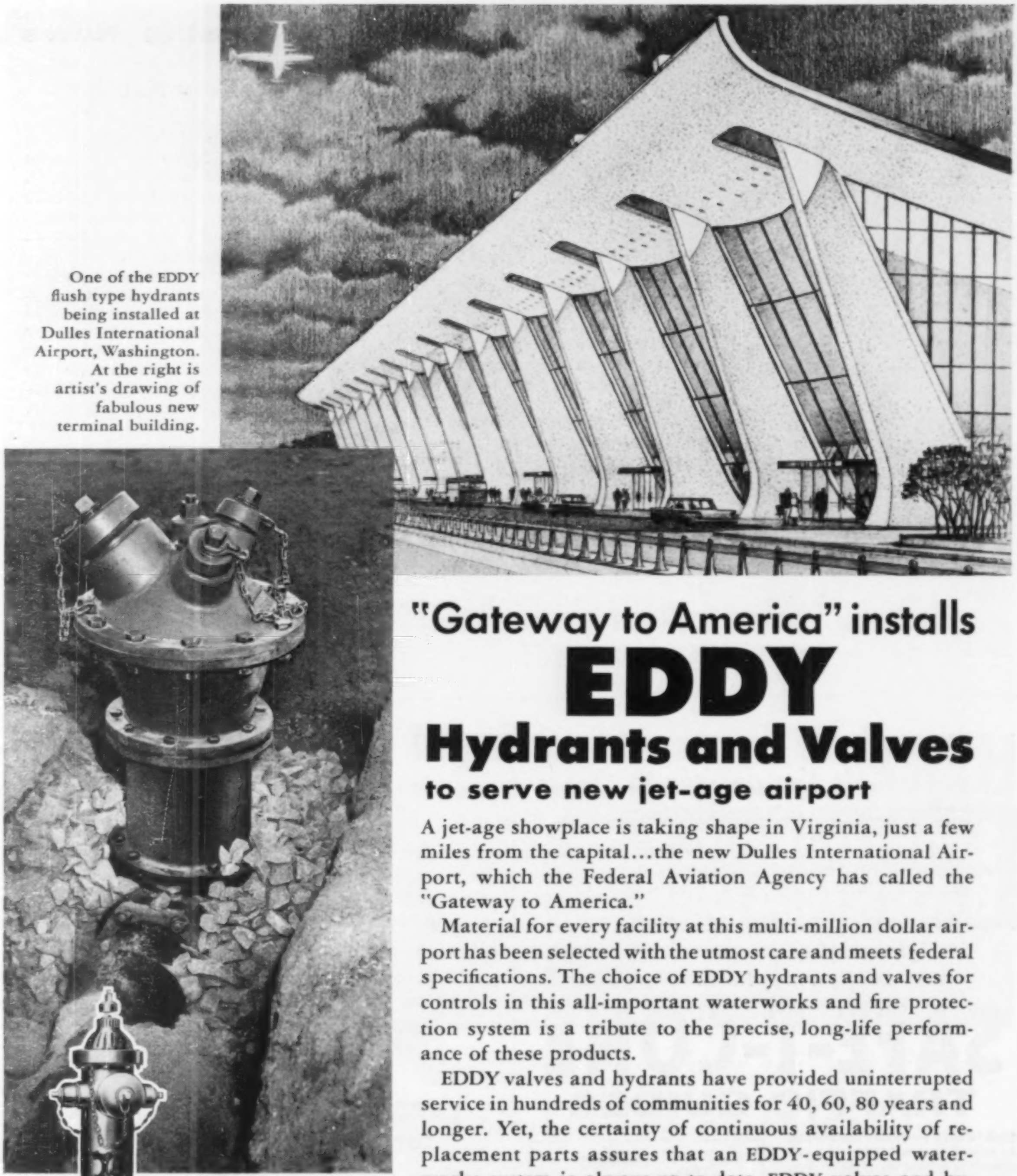
Tarco "Watchman" Hoppers in two sizes: **Model 3Y—3 cu. yd.; Model 5Y—5 cu. yd.** (Model 1Y—1 cu. yd. for "Jeeps" and pickups). **All welded** steel. **Top screens** and **tie-down clamps.**

Rugged "Watchman" Hoppers used with Type V-3 Electric Cab-Controlled "Scotchman" Spreaders make **ideal one-man operated spreaders.** Spread with body in normal "down" position. Install or remove the Hopper and Spreader in 20 minutes.

See your Tarco "Scotchman" Dealer about liberal trade-in allowances.

TARRANT MFG. CO.

23 Jumel Place, Saratoga Springs, N. Y.



One of the EDDY flush type hydrants being installed at Dulles International Airport, Washington. At the right is artist's drawing of fabulous new terminal building.

"Gateway to America" installs

EDDY

Hydrants and Valves

to serve new jet-age airport

A jet-age showplace is taking shape in Virginia, just a few miles from the capital...the new Dulles International Airport, which the Federal Aviation Agency has called the "Gateway to America."

Material for every facility at this multi-million dollar airport has been selected with the utmost care and meets federal specifications. The choice of EDDY hydrants and valves for controls in this all-important waterworks and fire protection system is a tribute to the precise, long-life performance of these products.

EDDY valves and hydrants have provided uninterrupted service in hundreds of communities for 40, 60, 80 years and longer. Yet, the certainty of continuous availability of replacement parts assures that an EDDY-equipped waterworks system is always up-to-date. EDDY valves and hydrants meet all AWWA standards and are available to fit any existing or planned installation.

***SEND TODAY** for information on the complete line of EDDY Valves, Hydrants and other waterworks specialties*

EDDY VALVE COMPANY

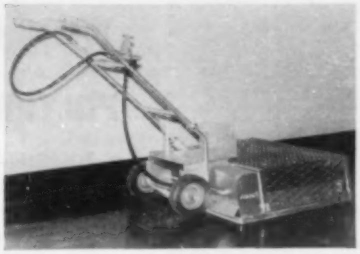
A Subsidiary of James B. Clow & Sons, Inc.

WATERFORD
NEW YORK

(Continued from page 217)

fic and heat. Approximately two inches of penetration is achieved in less than four minutes by this unit.

Infra-red heat has the advantage of melting asphalt without burning. This allows the re-use of existing materials when highway surfaces are being repaired. *Bulletin* HE-PR-1 gives full details on Model HE-PR-32; for a copy write to AEROIL PRODUCTS CO., INC., S. HACKENSACK, N. J.



Highway Traffic Lane Broom

This 40-inch angle broom sweeps a 36-inch swath, swivels right or left 30°, depending on the angle required with varying wind conditions. Mars Industries developed it for highway and street sweeping prior to traffic lane painting.

The broom is of heavy steel welded construction with a hydraulically lifted and driven nylon fibre broom core. (Palmyra and other broom fibres also are available.) The nylon fibre is impervious to water and can be field replaced in a single preformed coil section. Heavy-duty spring loaded casters enable the broom to float to the contour of the road surface being swept.

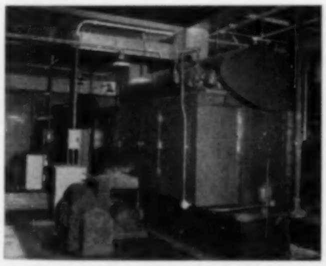
MARS INDUSTRIES, INC., 5209 W. BROADWAY, MINNEAPOLIS 22, MINN., designed the broom to fit most any highway department truck, to which it attaches directly.

Colorful, Safe Totlot Equipment

GAME-TIME, INC., LITCHFIELD, MICH., has designed its new combination slide and climber, the Hill and Dale, for the primary grade level. Its attractive yellow fiberglass canopy provides shade in hot weather and peppermint color posts appeal to the children. Construction is sturdy—steel and aluminum. Finish is abrasion resistant and weatherproof.

——Manufacturers Since 1885——

TWO MORE GRUENDLER SEWAGE SHREDDERS WITH LATEST LINK BELT BAR SCREENS INSTALLED AT CHELSIA CREEK HEADWORKS, METROPOLITAN DISTRICT COMMISSION, BOSTON MASS.



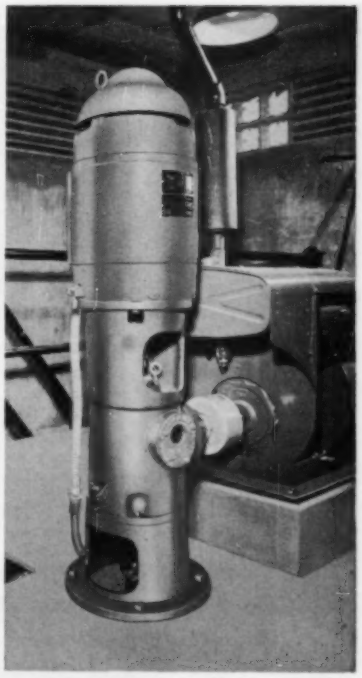
Wastes and debris are speedily reduced to a fine consistency with Gruendler Sewage Shredders in connection with Bar Screens. Thousands of Sewage Plants in our Cities employ this successful system to avoid trouble in their final treatment plants. May we refer you to the Gruendler Installations in your area. (Locations on request).
Also Garbage and Refuse Reduction Process, Sludge Grinding Equipment and other special applications.

Write to Dept., AC-1061 for our bulletin.

GRUENDLER CRUSHER and PULVERIZER CO.
2915 N. Market Street
St. Louis 6, Mo., U. S. A.

For positive protection against power failures, install

JOHNSON
Right angle
GEAR DRIVES



Cross State Development Co. installed the Johnson combination drive shown here in a sewage disposal plant in Florida. They report: "It's recognized as one of most efficient, packaged systems in the Tampa area. We've never experienced any difficulty." Neither will you because Johnson combination drive assures engine take-over the instant electricity fails. Either power unit may be overhauled without interrupting service.

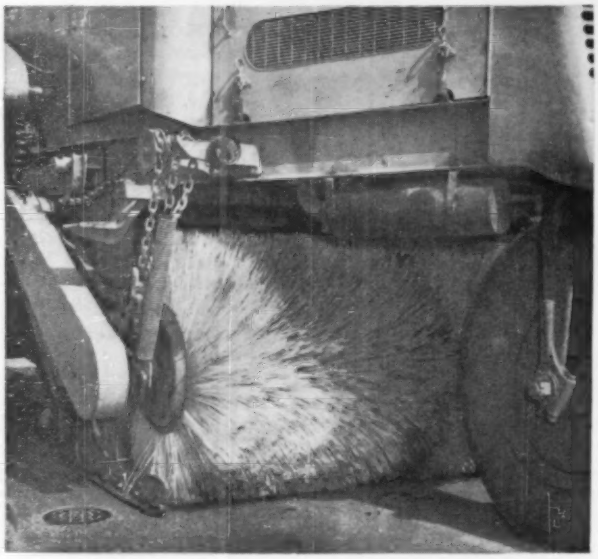
Sizes: 15 to 450 hp. Johnson Right Angle Gear Drives are available in combination, dual and standard types; for all horizontal prime movers; hollow or solid shaft. Please write for engineering catalogs.

7-R

JOHNSON MAKERS OF FINE GEARS SINCE 1904
GEAR & MANUFACTURING CO., LTD.
8TH AND PARKER STREETS • BERKELEY 10, CALIFORNIA

East and Gulf Coast representatives:
Smith Meeker Engineering Co., 157 Chambers St., New York City

BETTER STREET-SWEEPING AT LESS COST



WITH *Wynene*® 18

POLYPROPYLENE BROOM FILLER

- **TOUGH — RESISTS CONSTANT ABRASION**
- **GREATER FLEXIBILITY MEANS LONG LIFE**
- **TOP EFFICIENCY IN ANY WEATHER**
- **RESISTS MOST CHEMICALS, GREASES, ACIDS**

With Wynene 18 Broom Filler, your present street-sweepers will perform with greater efficiency. Especially engineered for rotary brooms, it does a thorough job of keeping city streets clean. Wynene 18 has proven its superior qualities in actual service. Its unusually rugged qualities mean longer life, fewer replacements, with consequent lower maintenance cost. Get all the facts now about Wynene 18 Broom Filler. Standard specifications: .075 x 105 x 26", in Natural. Other gauges and lengths available to meet your specific requirements.

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FREDERICK H. CONE & COMPANY, INC.
181 FRONT STREET • NEW YORK 38, N.Y.

MANUFACTURERS:

NATIONAL PLASTIC PRODUCTS COMPANY, INC.
Saran, Nylon and Polyolefin Fibers—Nevamar High-Pressure Laminates—Wynene Extruded and Molded Products
ODENTON, MD. • NEW YORK, N. Y. • MIAMI, FLA. • CHICAGO, ILL. • DALLAS-FORT WORTH, TEX.
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The hand-held

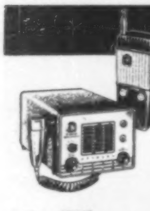
2-WAY RADIO

that outperforms 'em all!

Anyone can operate—no license required—priced from $109.50!

Instant contact anywhere . . . Viking "Personal Messengers" are delivering outstanding performance! Cut operating costs, boost efficiency . . . ideal for police, fire and rescue activities, park boards, maintenance crews and dozens of other municipal applications! Also being used by utilities, field crews, plant watchmen and security personnel, for personal paging in manufacturing plants, warehouses, freight and shipping yards. Viking "Messenger" transceivers are available in compact hand-held units or more powerful base stations and mobile units. Send today for full details.

FREE! SEND FOR COLOR BROCHURE



Please rush "Messenger" details to:

NAME______________________________

ADDRESS___________________________

CITY____________STATE____________

VIKING *Messengers*

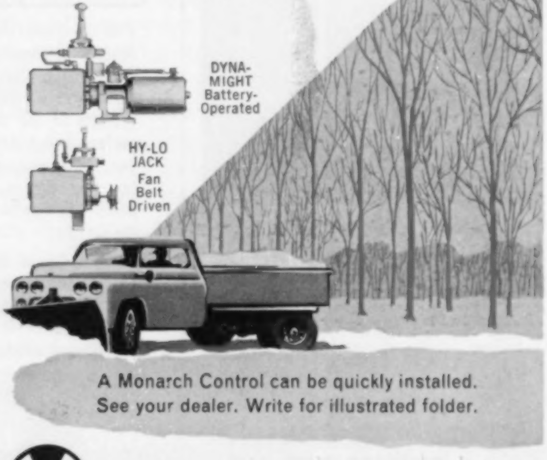
E. F. JOHNSON CO.
1905 10 Av. SW, Waseca, Minn.

REMOVE SNOW FASTER

with MONARCH

Power Hydraulic Controls

Don't delay! Now, before winter comes, install a Monarch Power Hydraulic Control on your snow removal equipment. Instant snow plow action—raise, hold or lower—right from the cab with the flick of the wrist. Thousands in use!



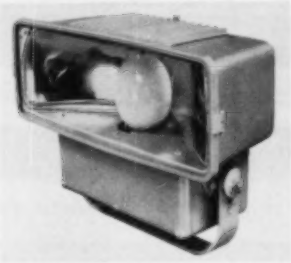
A Monarch Control can be quickly installed.
See your dealer. Write for illustrated folder.

MONARCH ROAD MACHINERY COMPANY
1363 Michigan St., N.E., Grand Rapids 3, Mich. U.S.A.

G-E Expands Area Lighting Line

A significant expansion of its area lighting product line has been announced by General Electric Co., Schenectady 5, N. Y.

Two new powerpack mercury units and two fixtures utilizing Quartzline lamps augment its traditional line of floodlights. The mercury units are available in two sizes, both for applications where lights will be used for more than 1000 hours a year, and where wide angle beam is desirable.



In the incandescent line, two models employ the Quartzline lamp, with its higher lumen output, tightly controlled beam, longer life, and high-lumen maintenance. For these lamps G-E developed the QF-500 (500 watt) and the QF-1500 (1500 watt). The units make possible the lighting of larger areas with fewer poles than necessary with conventional incandescent lighting.

The PMA-115, a canopy-covered luminaire with a shatter-resistant acrylic-plastic refractor, is designed primarily for mercury, but accommodates incandescent as well. Expected uses include entrance roads, walkways, parks, apartment or housing developments.

For fluorescent applications G-E offers the PMF-104, the only post-mounted fluorescent fixture on the market. It's designed for 10- to 20-foot mounting heights, carries a single 4-foot, 6000-lumen Power Groove lamp. Expected uses include pedestrian malls, front entrance drives, walkways, swimming pool areas.

The PMG-114 is G-E's new post-mounted filament luminaire, designed for walkways, entrance drives and malls, where decorative appearance and low mounting heights are desirable.

For control of these units, G-E offers a "Quick-Response" photoelectric control, designed for applications where extended time delay is not desired.

Printer-Reader

The Recordak Reader - Printer makes paper copy of any document no microfilm with push-botton ease. It operates with 16mm or 35mm roll film and with microfilm records

(Continued on page 223)

Wiley **BOOKS**

UNIT OPERATIONS OF SANITARY ENGINEERING

By L. G. Rich, *Clemson College*. A rational approach to the design of unit operations, this book unifies basic principles to provide greater coherence in the theoretical development of design relationships. It considers many operations not usually covered in sanitary engineering books, including aerosol separation, gas transfer in packed tower and tray columns, heat transfer, evaporation, and drying. Chemical engineering notation is used throughout. 1961. 308 *pages*. $10.75

THE CONSULTING ENGINEER

By C. Maxwell Stanley, *Stanley Engineering Co.* From *The Consulting Engineer* magazine: "It is fairly safe and completely honest to describe this book as uniquely useful to those engaged in consulting engineering . . . the only comprehensive guide available for practicing consultants or for graduates aspiring to the profession . . . Part I deals with the consultant's role in society and his relationship with the client. Part 2 studies the internal management of a consulting engineering firm—and this is where Stanley's experience counts heavily . . . " 1961. 258 *pages*. $5.95

SEND NOW FOR YOUR ON-APPROVAL COPIES

JOHN WILEY & SONS, Inc.
440 PARK AVENUE SOUTH NEW YORK 16, N. Y.

For all-'round deodorizing . . .

ROUNDS

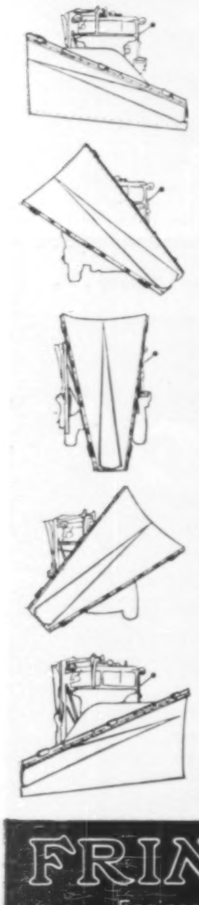
Fragrant, laborless deodorant discs for urinals, bowls, garbage pails, lockers, closets

Deodoroma ROUNDS cost in use averages only a *fraction* of one cent a day. Rounds are formed under 70,000 pounds pressure: are dense and durable. Fragrance is locked in: lasts until the last particle has vaporized—there's no harsh "moth cake odor." Packed eight to the telescoping box—each Round sealed airtight—easy-to-shape Holzit wire holder in every box. For literature write to The C. B. Dolge Company, Westport, Conn.

For free sanitary survey of your premises ask your Dolge service man

Dependable DOLGE
WESTPORT, CONNECTICUT

FRINK ROLL-OVER ELIMINATES DEADHEADING, *CUTS REMOVAL TIME*



rotates from left to right position in 15 seconds!

Here's why nothing matches a Frink Roll-Over Sno-Plow for clearing airports and thruways rapidly and economically.

The Roll-Over's unique rotating moldboard instantly reverses to plow either side . . . completely eliminates deadheading . . . cuts plowing time in half! Cab operated hydraulic controls raise, rotate and lower blade to plowing position in 15 seconds, even while truck is moving.

The Frink Roll-Over combines the higher speed and deeper snow handling qualities of a one-way with unmatched versatility. Snow can always be plowed with the wind, or towards any disposal area. And you can park "plow up," within the width of your truck.

For complete details on unique **Frink Roll-Over Plows** write Dept. AC1061

FRINK SNO-PLOWS, INC.,

Engineers of Major Advances in Modern Snow Plow Construction

Frink Sno-Plows Inc., Clayton, New York

In Canada:
Eastern Steel Products Co., Preston, Ontario

TAX EQUALIZATION APPRAISALS

Offering a background of a quarter century of

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The "Pick" of
MINNEAPOLIS

THE Pick-Nicollet

600 *Rooms with bath from* **$6.00**

NO CHARGE FOR CHILDREN
FREE RADIO AND TV
AIR-CONDITIONED ROOMS

Delicious Cuisine and Beverages

- WAIKIKI ROOM
- JOLLY MILLER
- COFFEE SHOP

ALWAYS THE BEST · ALBERT Pick HOTELS · FOR EVERY GUEST

FEderal 3-3177
Thomas P. Ryan, mgr.

(Continued from page 221)

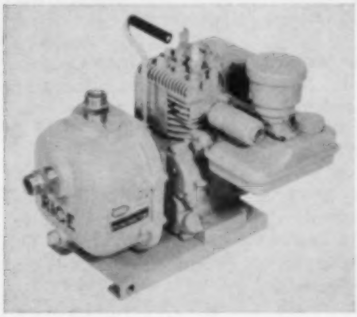
unitized in aperature cards or card-size film packets. Printing operation is automatic after print button is pressed.

Complete processing of the print takes approximately 45 seconds, but the company reports that the reader can be used for viewing after 25 seconds. Cost per print, including chemicals, is said to be approximately 9 cents. Print size is 8½ inches by 11 inches with an image area of 7 inches by 9¼ inches.

For additional information on this new Reader-Printer, write RECORDAK, 415 MADISON AVE., NEW YORK 17, N. Y.

Engine- and Electric-Powered Centrifugals

Users of light pumps will find this new line of pick-up pumps designed to include openings ¾-inch and 1-inch on both suction and discharge. Pumps of ¾ inch opening handle to 1500 gpm; capacities of the 1-inch range to 2400 gpm.



Aluminum construction has scaled pump weights down to 18 pounds without power and up to 43 pounds with 2-hp, air-cooled gasoline engine. Power diversification includes gas engines, electric motors, belt drives or with flexible coupling only. Nonclogging impeller is of bronze, open-type as used on many other types of Rice centrifugal pumps.

There are ten models. For additional information, request *Bulletin* CPI-28; write to RICE PUMP & MACHINERY CO., BELGIUM, WIS.

Emergency Power

"Rapid Fire" is the name Kohler Co. has given its new 1.5C25 electric plant, a 1500-watt model equipped with a special push-button starting unit which permits starting it on route to the disaster scene.

The starting unit is connected to the truck's battery for starting. Thus, when the truck arrives at the fire, the generator set is warmed up and ready to go to work. The battery

(Continued on page 224)

No other filtering medium compares with

ANTHRAFILT

Trade Mark Reg. U. S. Pat. Off.

Anthrafilt stands alone as the one Filtering Medium that is *best* for all types of filters.

Years of efficient and economical use in every type of filter plant has made ANTHRAFILT the standard of excellence in the filtering medium field.

ANTHRAFILT

offers important advantages over sand and quartz

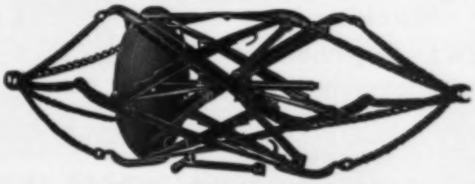
DOUBLES length of Filter runs • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

IDEAL FOR USE IN EVERY TYPE OF FILTER

Write for further information, test samples and quotations to:

PALMER FILTER EQUIPMENT CO.
P. O. Box 1696 — 822 E. 8th St., Erie, Pa.
Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

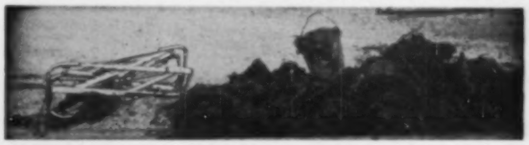
EXPANDING ROOT CUTTER SEWER CLEANER



Fits in on Every Sewer Cleaning Job
Adjusted in 30 seconds to fit sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Open and in action removing roots and cake sediment like this.



Write for our new catalog on complete sewer cleaning equipment.

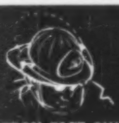
EXPANDING SEWER MACHINE COMPANY
108 East Walnut St. Nappanee, Ind.

When seconds count...

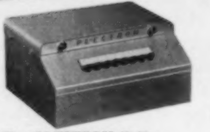
PLECTRON RADIO TONE ALERTING SYSTEMS *make the difference!*

PLECTRON TONE ACTIVATED RECEIVERS GIVE YOU THESE EXTRA ADVANTAGES AT NO EXTRA COST:

- Transformer powered
- Crystal Controlled
- Automatic or Manual Reset . . . User's option
- Adjustable Time Delay . . .
- "Live" time can be adjusted from 20/90 seconds
- Choice of 3 attractive colors



PLECTRON FACE SHIELD
Positive eye & face protection against: Heat; Smoke; Debris; Water; Flying Embers; Wind; Rain; Dust; Snow

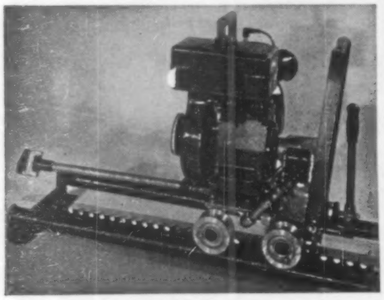


The PLECTRON Fully Automatic Tone Generator

- Select Intermittent or Steady Tone
- Monitor Speaker
- Timed Tone Cycle
- 16 Tone Capacity

Designed and Manufactured by
PLECTRON CORPORATION
Overton, Nebraska

EBMI
Underground Boring Machine
New! Improved!



Model 70

- **BORES**—with no surface break
- **BORES**—up to 250 feet in length
- **BORES**—up to six inches diameter
- **BORES**—so drill stem of pipe of conduit stays
- **BORES**—1,000 feet on 1 Gal. of gas
- **REAMS**—up to 12 inches diameter

Write immediately for information.

EBMI
EARTHWORM BORING MACHINE, INC.
P. O. Box 1100
Santa Monica, California

HEAD AND SHOULDERS ABOVE THE REST!

FORTEX PAILS

Most Durable and Safe All-purpose Pail. Resists extremes of heat and cold, won't crack or dent . . . resists effects of acids, caustics, cement, chemicals, detergents, fuels, paints, plaster. Seamless. Subdues Noise. No sharp metal edges. Makes all other pails old-fashioned.

Complete line of standard sizes up to 10 gallons.

Write for quantity prices.

"Reinforced Molded Rubber-Fiber Pails for Every Purpose"

FORTEX INDUSTRIES, INC.
44 WHITEHALL ST., NEW YORK 4, N. Y.

Purchasing

(Continued from page 223)

cable then may be disconnected—and the plant transported where needed.

KOHLER Co., KOHLER, WIS., also expects the plant to be a boon to OCDM emergency and rescue vehicles, as well as repair trucks operated by public utilities.

Purchasing News Briefs

- **Windsor Pippin Corporation**, which recently merged, by stock transfer, with Mersick Industries, Inc. of New Haven, Conn., will continue operation as a Windsor, Vt., concern with no change in personnel.

- **American Concrete Corp.**, Chicago, Ill., has moved its manufacturing facilities and offices to a newly acquired plant at Dahringer Road in Waukegan, Ill.

- a $1 million modernization and expansion project has been launched by **Ludlow-Rensselaer Valve Mfg. Co.**, Troy, N. Y., producer of valves and hydrants.

- a new subsidiary corporation has been formed by **Dorr-Oliver Incorporated**, Stamford, Conn. It is known officially as Sociedade Tecnica, Industrial e Comercial Dorr-Oliver (Brasil) Ltda., and has its headquarters at Rua 15 de Novembro 164, 3° andar, Sao Paulo.

- **Gar Wood Industries, Inc.**, Wayne, Mich., has formed Gar Wood-France, S. A., a corporation located in Clichy, France, which will manufacture and sell in the European common market truck equipment, earthmoving and road machinery products designed and developed by Gar Wood Industries, Inc., U. S.A.

- a new warehouse in Los Angeles will stock the line of pipe couplings, pipe fittings and repair devices manufactured by **Dresser Manufacturing Division, Dresser Industries, Inc.** It will serve customers in Southern California and Arizona.

- sales offices of the **R. D. Wood Company** have been moved from the Public Ledger Bldg. in Philadelphia to the manufacturing plant location in Florence, N. J.

- **Golden-Anderson Valve Specialty Co.**, Pittsburgh, Pa., has purchased Rotary Valve & Engineering Corporation and has changed its name to

Rotary Valve Corporation. All assets of the newly acquired subsidiary have been moved to Pittsburgh. Rotary Valve & Engineering were designers and manufacturers of circular full-port rotary valves and linear valves for high pressure and high velocity applications.

- acquisition of the Detectron Company from Computer Measurements Corp. of Sylmar, Calif., has been announced by **Tinker & Rasor**, San Gabriel, Calif., manufacturer of precision equipment for detecting flaws in protective coatings. T & R will continue to manfacture the complete Detectron line of pipe locators, marketing the majority of items through distributors.

- three distributor appointments for the Michigan line of construction and heavy bulk materials handling machinery have been announced by **Construction Machinery Division, Clark Equipment Co.**: Arrow Equipment, Inc. for the entire State of North Dakota, Western States Machinery Co., Denver, Colo., for all of Colorado, Rowand Machinery Co., Spokane, Wash., for part of Idaho and Washington.

- **Lock Joint Pipe Co.**, producer of concrete pipe, has acquired Oscar Davis Co., Paterson, N. J., fabricator of rigid PVC valves, fittings, and other specialties. This addition to Lock Joint's recently formed Plastics Division will be operated as a wholly-owned subsidiary. The present management, headed by Oscar Davis, will be retained.

New and much larger quarters of Kennedy's Van Brush Mfg. Co. comprise approximately 25,000 square feet of manufacturing and warehouse space of three floors as well as offices. Kennedy's makes all popular types of rotary broom sweepers and drag broom levelers used by builders of black top roads. The plant is now located at 2748 McGee Trafficway, Kansas City, Mo.

APCO SUPER-DeLAVAUD CAST IRON PIPE WITH ALTITE® JOINTS

meets ALL 10 requirements for underground mains

- ✓ Service for centuries
- ✓ Bottle-tight joints
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- ✓ High record of maintained flow efficiency
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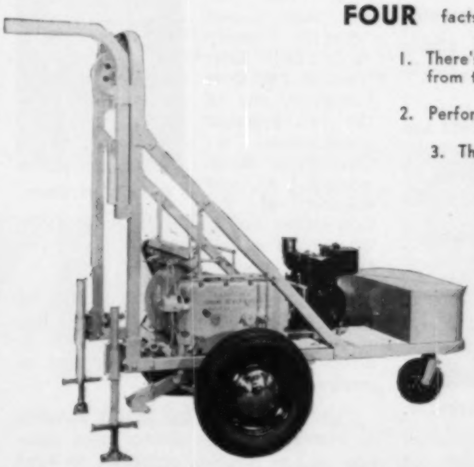

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TWO machines, located at the ends of the sewer section to be cleaned.

TWO models (501 and 502) each with 3-speed transmission, enable you to get the exact power and line speed you need:

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#501	11000 lbs.	9000 lbs.	7000 lbs.
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Division of
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Milwaukee 12, Wis.

ABOUT PEOPLE

The appointment of Frank M. Lukacs as assistant general sales manager has been announced by James Beattie, Jr., president and general sales manager of **Willys Motors, Inc.,** Toledo, Ohio.

Richard A. Overmyer has resigned his post as Deputy Street Commissioner of Philadelphia in charge of traffic engineering to accept a position with the **General Railway Signal Company,** Rochester 2, N. Y., as general manager of the company's Vehicle Traffic Control Division. In his new position, Mr. Overmyer will be responsible for the research, development, production and marketing of traffic control equipment.

Richard Overmyer

New manager of heavy chemical sales for **Allied Chemical's General Chemical Division** is Jack M. Blalock, formerly manager of market surveys.

Black & Veatch, Consulting Engineers, Kansas City, Mo., announce the association of Fred H. Puckhaber as a member of their organization with headquarters at 3517 Drexel Drive, Dallas 5, Texas.

Sheldon K. Howard has been named to the newly-created position of director of marketing of the Beloit (Wis.) Group of **Fairbanks, Morse & Co.** Manager of the company's diesel engine sales for the last two years, Mr. Howard also will guide the marketing of other products made at Beloit—magnetos and engine accessories, compressors, large pumps and large electric motors.

Sheldon Howard

Charles A. Cooper, vice president and group manager of **Rockwell-Standard Corporation's Industrial Products Group,** has announced the appointment of Charles C. Warne, Jr., as sales assistant to the vice president. This diversified manufacturing group includes the Brake Division, Air-Maze Division, Universal Joint Division, Stamping Division, as well as its wholly-owned subsidiary, Kerrigan Iron Works Co., Nashville, Tenn.

Charles Warne, Jr.

The Board of Directors of **Nichols Engineering & Research Corp.,** New York, N. Y., have elected Douglas R. Nichols, Jr., executive vice president of the firm. Mr. Nichols is a director of the organization and served formerly as vice president and treasurer. He also serves as a director and president of Nichols Engineering & Research Corp. of Canada, Ltd., Montreal.

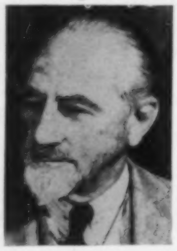
Douglas Nichols

Charles Gilmer

Harry Castle

Charles I. Gilmer has been named company sales representative in the Rocky Mountain States for **Dresser Manufacturing Division, Dresser Industries, Inc.** Harry R. Castle will represent the Division in Michigan, northern Indiana and western Ohio. Both men will be responsible for the marketing of the Division's pipe joining and repair products to the water works, marine, equipment, chemical and oil industries, according to James Hughes, Division sales manager.

John V. N. Dorr has resigned from the board of directors of **Dorr-Oliver Incorporated,** Stamford, Conn., but has been elected "director emeritus". Dr. Dorr founded The Dorr Company, one of the two principal predecessors of Dorr-Oliver Incorporated. A new member of the Dorr-Oliver board is Russell H. Dorr, Washington representative of the Chase-Manhattan Bank.


Dr. J. V. N. Dorr

Rainy Sprinkler Sales, a division of L. R. Nelson Manufacturing Co., Inc. of Peoria, Ill., has appointed Dr. B. P. Robinson assistant sales manager of its southwest district.

Philip J. Hughes has joined **Keasbey & Mattison Co.** as district sales manager at Los Angeles, according to word from J. R. Reichel, general manager pipe sales division at Ambler, Pa.

Vern Pray, formerly sales development manager for **Schield Bantam Co.,** Waverly, Iowa, has been appointed to the position of domestic sales manager. The sales development department, which will continue to handle all advertising and promotion, will function under the supervision of Vern Pray.

Nicholas Dykstra was named president, chief executive officer, and director of **Mack Trucks, Inc.,** Plainfield, N. J. Mr. Dykstra was formerly vice president of finance of McDonnell Aircraft Corporation, St. Louis, where he was responsible for formulating financial policies and overall corporate policies and executing financial programs.

Nicholas Dykstra

Charles F. "Chuck" Colesworthy was recently appointed general sales manager of **Southern Pipe Company,** division of U. S. Industries, Inc. He brings seven years of sales and marketing experience in the water pipe field to the job. His duties will include sales supervision, sales development and marketing.

Chuck Colesworthy

Election of Harry Heltzer as vice president of **Minnesota Mining and Manufacturing Co.** has been announced by 3M. He will continue to be responsible for the operation of the company's reflective products division and, in addition, assumes over-all responsibility for National Advertising Co., a wholly-owned subsidiary.

As manager of the construction machinery section, Western Division, of the **Chain Belt Company,** Milwaukee, Wis., William T. Powell will be responsible for all West Coast construction machinery activities, including equipment sales and administration of the firm's Los Angeles plant.

William Powell

Dr. E. B. Gunyou has been named director of research and development of **Neptune Meter Co.,** New York 20, N. Y., according to an announcement made by W. H. Cochrane, president. Other ap-

(Continued on page 228)

EXPIRED
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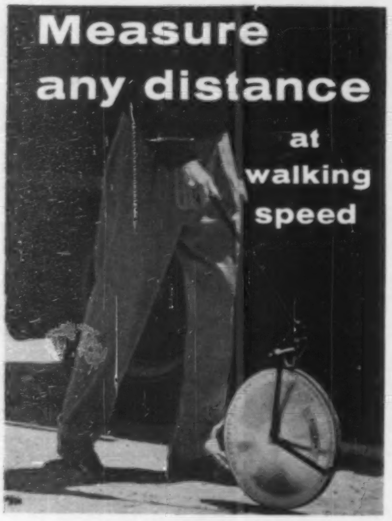

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Measuring Wheels

About People

(Continued from page 226)

pointments at Neptune Meter include those of Paul S. Wells as general manager of the company's Electronic Division and John T. Montgomery as sales representative for the Liquid Meter Division with the territory of northern Florida.

Jack Ironside

Jack Ironside has been appointed district sales representative in the Pacific Northwest for the Trojan tractor shovel line of **The Yale & Towne Manufacturing Co.,** according to George E. Gunther, manager of sales of the Trojan Division. Mr. Ironsides will headquarter in Seattle, Wash.

David Ackerman

Darling Valve & Manufacturing Co., Williamsport, Pa., producer of gate valves, butterfly valves and fire hydrants, has appointed David D. Ackerman director of sales development, Water Works Division. Mr. Ackerman has had extensive experience in selling to both the water and sewage industries. In his new position he will travel nationally to promote Darling Valves products.

E. J. Goes, formerly advertising manager of the Koehring Co., has joined **Maercklein Advertising, Inc.,** Milwaukee, Wis., as manager, industrial accounts. He will also serve as business director in the construction equipment field.

CLASSIFIED ADVERTISING

Advertisements in this section will be accepted at the rate of $15 per col. inch (minimum 2 inches). Send copy for ads to the Production Department, THE AMERICAN CITY, 470 Park Ave. So., New York 16, N. Y.

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The Buyer Determines Price

A used machine is priced at what the buyer is willing to pay . . . it's a measure of what *he* thinks is left in a machine. So, with used equipment, the buyer sets the price. This is clearly demonstrated at used equipment auctions. A check of auction prices throughout the country shows, for example, that the Cat No. 12 Motor Grader brings substantially higher prices than comparable machines of other makes—as much as 80% more. (Only machines of the same age, same condition and with similar attachments were compared.) What makes a Cat Motor Grader more desirable than other makes?

A Feature That Affects Cost

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The cost records of private owners and governmental bodies show which machines cost less. For example, an Indiana county keeps individual cost records on their six motor graders, 14 trucks, three loaders and five tractors. Their records showed that a year-old No. 12 needed only a set of head gaskets and two spark plugs with $25 labor, while two newer graders of another make needed major engine repairs, new clutches and side shift linkage. One town in New Hampshire reports that in over 20,000 hours, their No. 12 has never had a breakdown that held up work more than three hours. Operating costs—24¢ per hour exclusive of fuel, oil and operator. Comparing a Cat No. 12 to another make (after 3½ years' service), the records of an Arkansas county showed a saving of $2478.57 in parts and labor for their No. 12.

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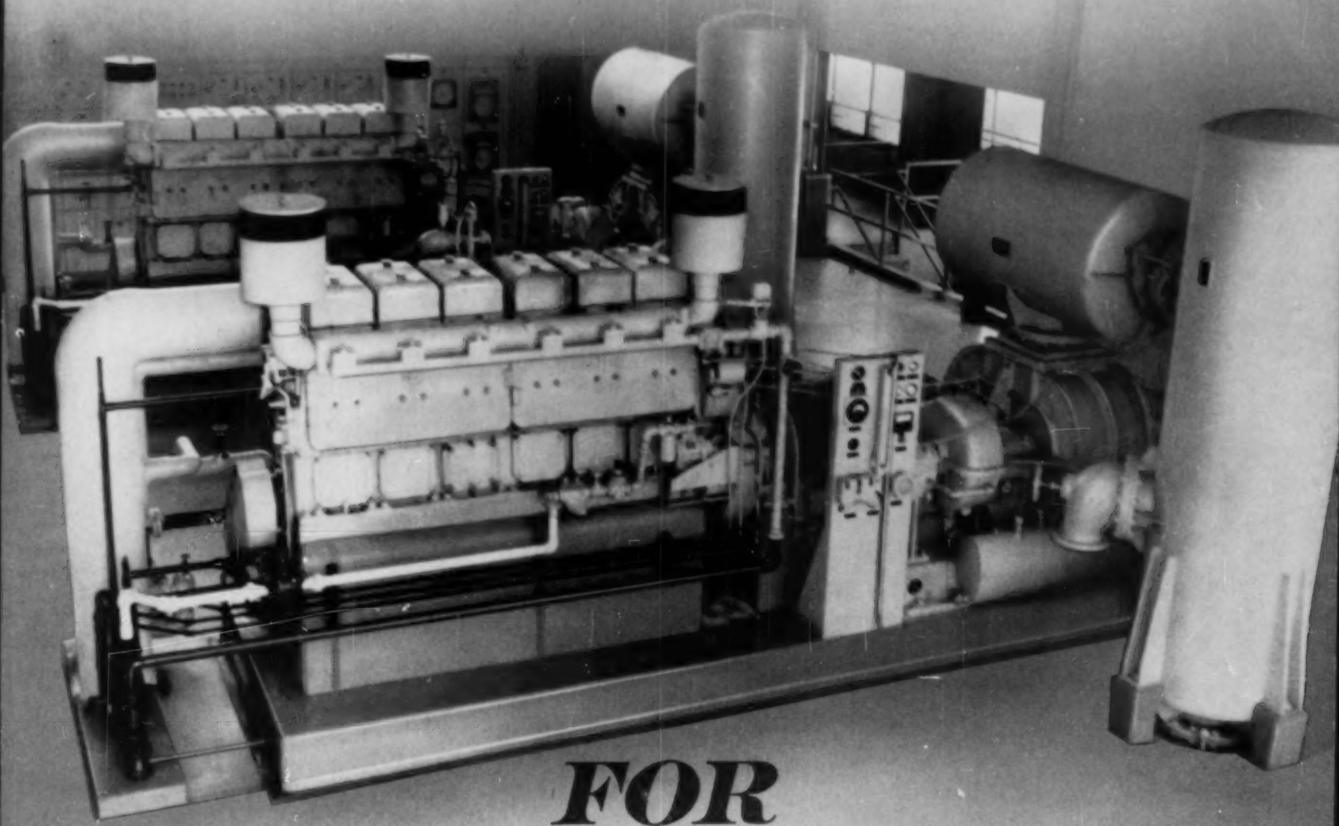

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City of Phoenix reports—

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27 mph job to job

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